

VOL. 1,



MANILA, P. I., OCTOBER, 1904

No. 5

THE FAR-EASTERN REVIEW



Map of the Far East region showing major cities and ports, including Vladivostock, Port Arthur, Chefoo, Seoul, Weihaiwei, Kiau Chou, Shanghai, Yokahama, Peking, Tientsin, Hong Kong, Manila, Rangoon, Bangkok, Saigon, Singapore, Batavia, and Calcutta.

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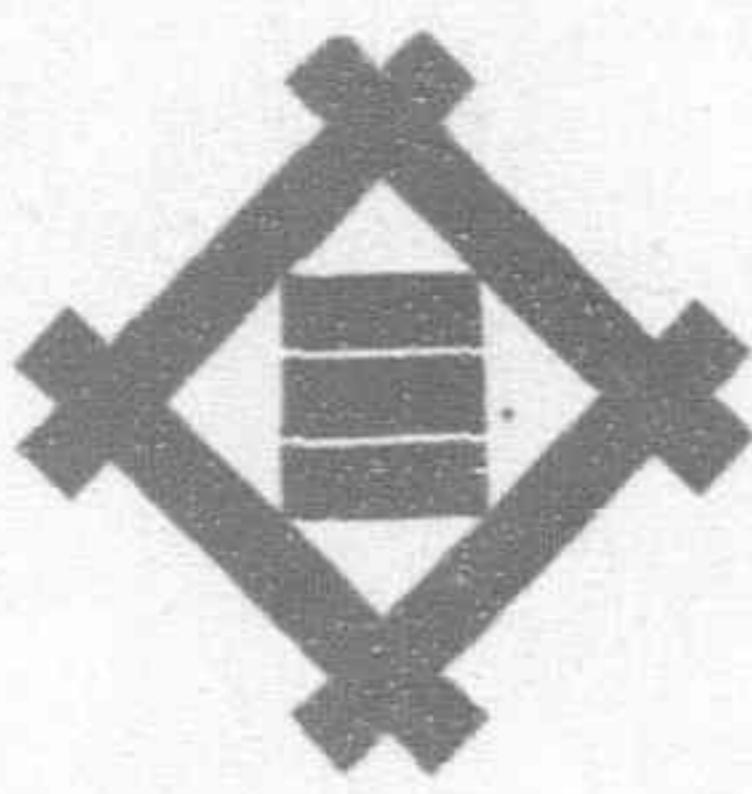
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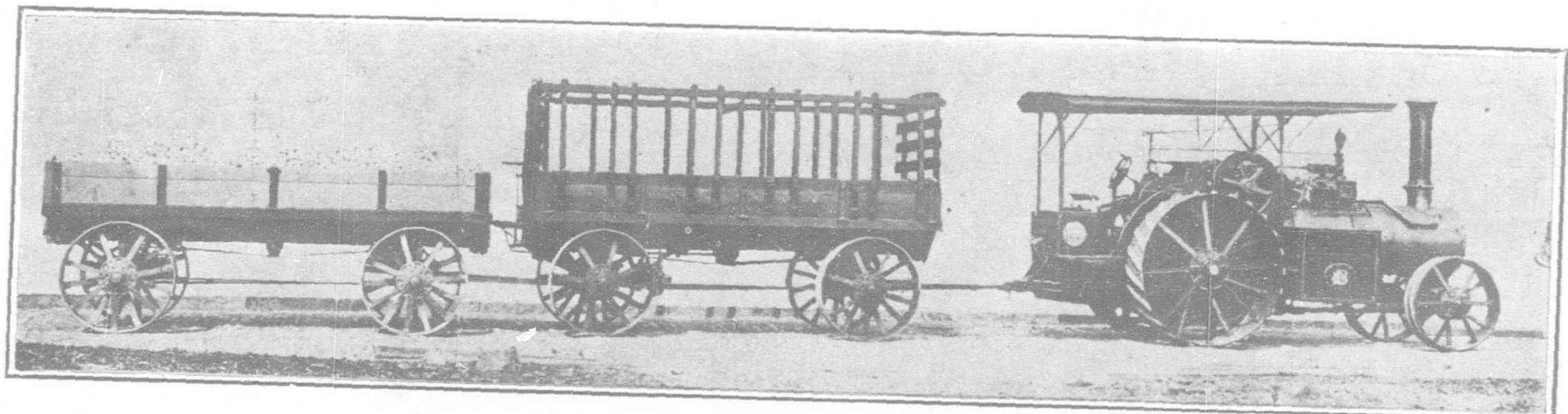
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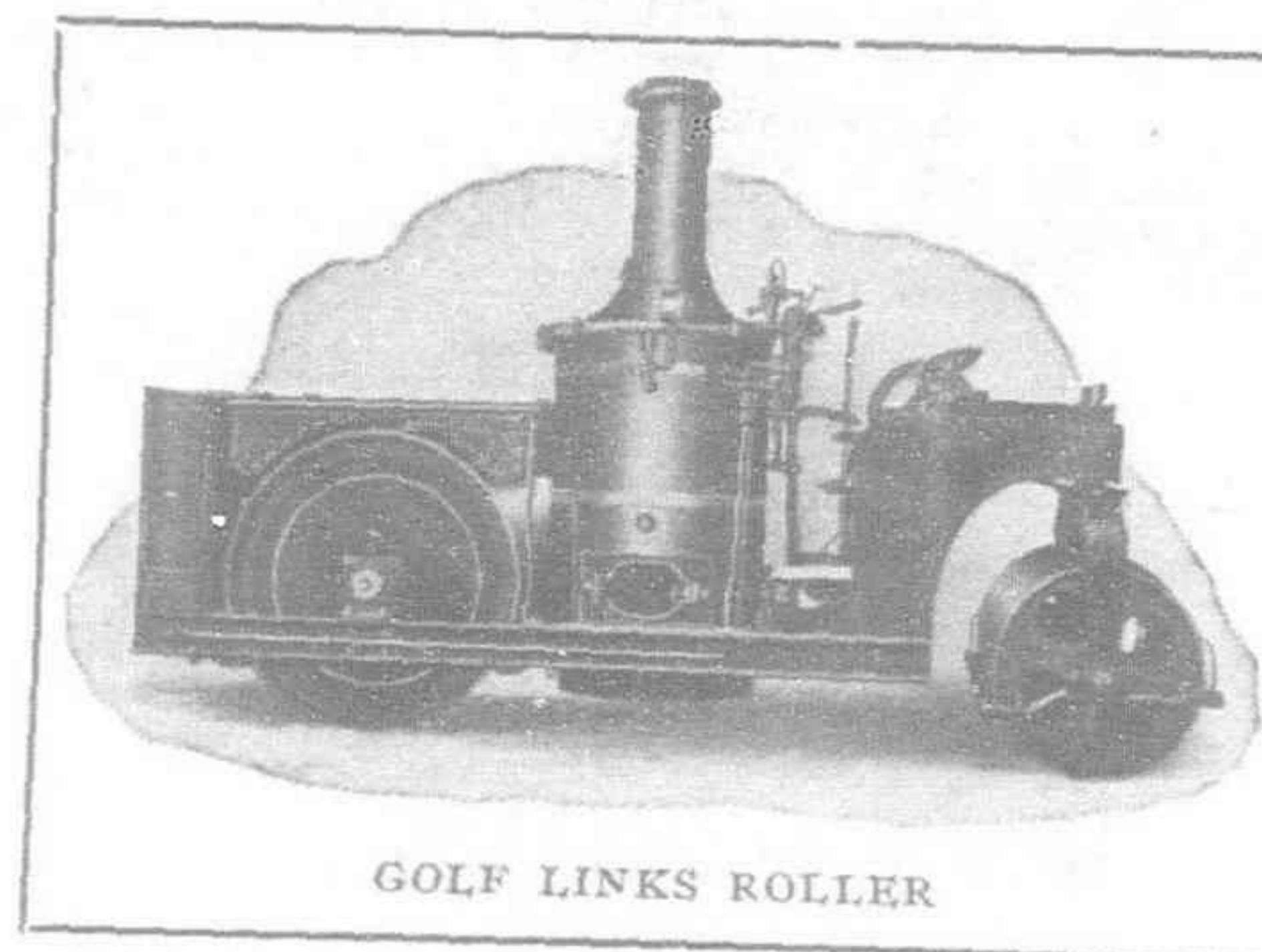


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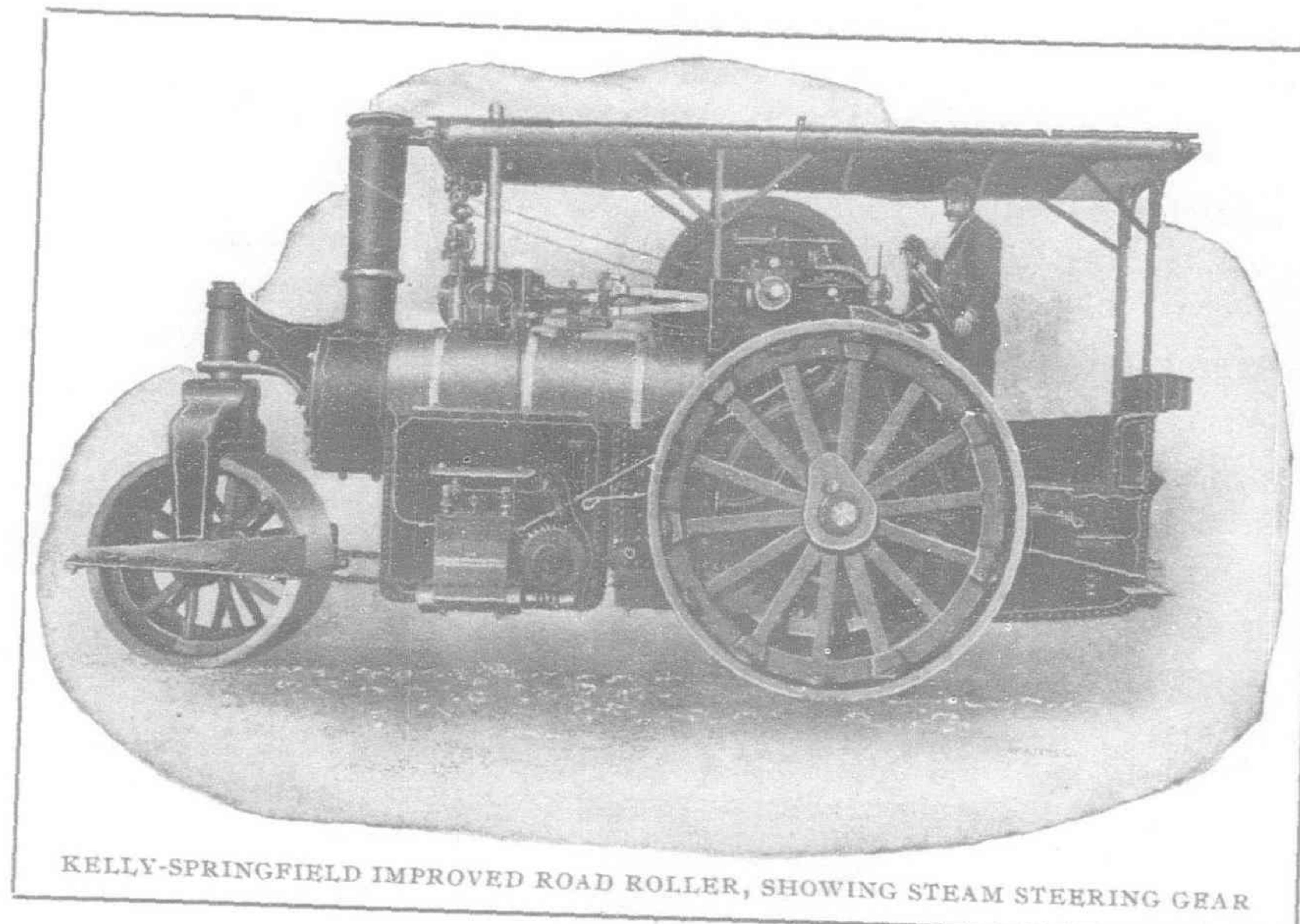
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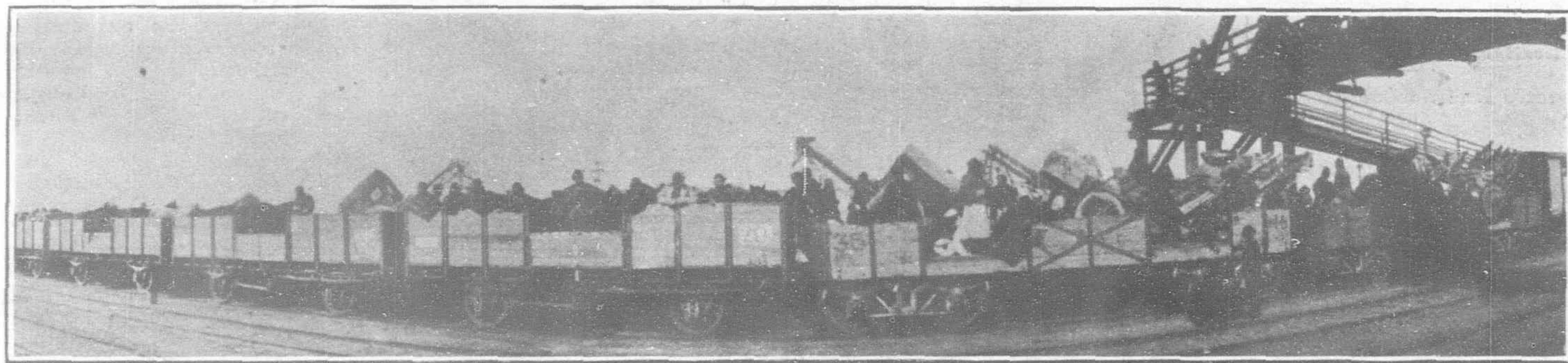
VOL. I.

MANILA, P. I., OCTOBER 1904.

No. 5.

MINERAL RESOURCES OF NORTH CHINA

By A. J. G. DENNEY, M. E.



CHINESE IMPERIAL RAILWAYS: TROOP TRAIN FOR MANCHURIA.

(EDITOR'S NOTE.—The following article from the pen of Mr. Denney is a most interesting and valuable contribution to the foreign knowledge of the resources of China. Mr. Denney is an expert mining engineer, residing at Tientsin, and, during the prosecution of his surveys throughout the Chili Province, has acquired a vast fund of valuable data and information regarding the hitherto little known geological formation of the country, and his reports can be considered as authentic and authoritative.)

Little has been written about the mineral resources of China, and to a large extent the information that has leaked through to the outside world has been through the medium of missionaries, whose source has been the unreliable native reports and their own inexperienced observations. The following pamphlet is not a missionary report, but has for its foundation the results obtained through personal experience, while inspecting mines and reporting on properties for various foreign and Chinese companies.

As the field is so large, I shall confine this article to the province of Chili. The map published in connection with this has been compiled from the results of personal surveys, and from various other reliable maps and sources. Up to the present time, there have been no maps or plans published of the country outside the Great Wall. This district, however, bids fair to be the coming mining center of Chili Province, especially for gold. The outlook is not so promising for alluvial workings, but is exceptionally good for deep mining operations, of lode formations and quartz veins, for the development of which a large amount of capital is required.

Few locations are more favorably situated for successful deep mining operations than the mountainous region in the north of Chili. When the Chinese authorities have proper mining laws enforced, and protection guaranteed to foreign capital, this particular field will be the first to claim the investor's attention.

Heretofore the gold mines of this district have been very carelessly worked; so much so, that only the most prolific mines could pay

for working them in the primitive way of the native. In many places the mines have been worked to water level, which varies from 20 ft. to 200 ft. in depth, and, not having the necessary machinery to cope with the water, they have been abandoned. The geological structure of the country is similar to parts of Victoria and New South Wales, Australia. There are the usual igneous and metamorphic rocks, in all their varieties. These rocks are traversed by quartz beds and veins, but the whole of the lodes and quartz veins are not auriferous, for there are long stretches of barren reefs, besides those that are productive.

In many quartz reefs and lodes the gold is usually associated with iron gossan or pyrites, and passing through hornblendic and porphyritic rocks, also schists and diorites. Some of these reefs and lodes have been productive to a depth of three hundred feet or more, and are now abandoned owing to the want of capital and machinery.

GOLD OUTPUT.

In the absence of any authoritative statistics, it is impossible to state definitely the amount produced from each mine.

The following is the *annual export of gold* from the *port of*

TIENTSIN, CHILI PROVINCE, CHINA.

1901 ... Gold Bar ...	Hai-Kwan Taels	2,849,139.
1902 ... " ... "	"	4,645,430.
1903 ... " ... "	"	.....

The above table shows an increase of nearly double the amount from 1901 to 1902, but whether this is mostly in bars, leaf, or coins, or whether they come from the Chili gold fields or from other Provinces, it is impossible to ascertain, as no statistics are kept by customs or local authorities.

The table represents only what passes through the customs officials' hands, which can be safely estimated as only a small portion of the actual amount of gold produced. These bars as a rule weigh ten Chinese ounces.

YIELD.

From various mines at work in North Chili, the average yield, employing native methods, is

about 7 dwts. (thirty shillings) per ton, to make a profit; but, with up-to-date crushing machinery, the cost should not exceed 5 dwts. per ton on free milling ores.

The Chili gold fields have lodes and reefs from six inches to fifteen feet in width, varying in character and still more in richness, and a great majority will yield payable gold.

These quartz reefs or lodes cannot be classified amongst the largest in the world, nor can a rough estimate of ores in sight be given. In one district alone the auriferous belt extends a distance of over twenty miles, and numerous quartz veins carrying gold have been opened by small native shafts and open cut workings. This is only a very small section of North Chili, which is hundreds of square miles in area, and it can be readily understood that until proper plans and surveys and practical developments have been carried out to a sufficient depth, no proper estimates can be given of the value of the field.

Although several outcropping quartz reefs containing gold have long been known to exist, the natives are prohibited from working them by the local authorities. The high officials demand and extort so much money from Chinese holders of mining rights, or small syndicates holding permits from the Imperial Government to work these mines, that Chinese speculators will not invest any money in machinery or to carry on development work.

In Chili there is a field awaiting exploitation which may be expected to yield exceptionally profitable results.

Many a reader may enquire, "Why this rich mineral country in Asia should also be so poor? Why, in other words, has China benefited so little from her vast mineral possessions?" The question is pertinent, but it is not the "poser" that it may appear at first sight. As a matter of fact, China has never mined to her own benefit. From the earliest discoveries, the natives have only scraped on the surface for the much-coveted metal. At the same time they have been afraid to let the foreigner in with his capital and expe-

(Continued on page 6.)

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MANILA, OCTOBER, 1904

THE GOVERNOR'S SPEECH.

"How many more centuries do you think it would have been, had the Spanish Government remained here, before you would have had the privileges that you now enjoy? How often do you think it would have happened under the Spanish, in the first place, that there would have been a Federal Party; in the second place, an honorary commission to visit foreign countries; and in the third place, a banquet held in their honor on their return, to which gentlemen came to speak in favor of independence? How many days do you think would have elapsed before you would have made acquaintance with the field at Bagumbayan?"

For the first time in the history of the American occupation of the Islands has the proper keynote been sounded against the spread of the "independencia" agitation. For the first time has our executive with the manhood of the true American forcibly expressed his views on this ever-recurring topic, which has been the real cause of the commercial depression, and the lack of confidence in the future of the Islands.

To this agitation more than any other cause can be traced the reluctance of American capitalists to lend their support to exploiting the resources of the Philippines.

We can well repeat the substance of the governor's words. How long would the Spaniards (or any other European nation) have tolerated a campaign bordering on the seditious? How long would it have been before they would have sent honorary commissioners to the mother country, and then allow them to return and initiate an independence campaign right under the very nose of the governor? What Spanish governor would have submitted to the implied insult of being placed at the foot of the list of speakers, and compelled to listen to seditious talk under the guise of an after dinner speech? How long would it have taken before they were marched out to Bagumbayan field, or in other words stood up against a stone wall and shot.

And we answer—only a few hours.

We hope the remarks will have their full effect, and that we have seen a termination of this menace to our peace and prosperity. When the time is ripe, the American nation will fulfil its promises. There has been too much of Boston and too little of Dixie sentiment in our handling of this problem.

THE NEW CURRENCY AND REVENUE LAWS.

The new currency scheme of the Islands has made great progress, and at the rate the debased Mexican and old Philippine coinage is disappearing, it will not be long before we will be free of it altogether.

Despite a certain opposition by a part of the populace to relinquish the old familiar coins, it is a matter of congratulation that nearly all the commercial houses of Manila and the provinces have placed their business on the new basis. A considerable quantity of the smaller coin is still in circulation.

These will take some time to completely replace, as the new fractional currency still seems to be inadequate to the demand. The day of the Mex. dollar is, however, practically past, and with the large shipments to China, where it finds a good market and steady demand, we may expect that, by the 1st of January, the new currency will have eliminated the old.

Whatever large amounts may be left in circulation in the provinces will be driven in, as soon as the new internal revenue law gets into good working operation.

The ease with which the result has been achieved reflects the highest credit on the government, and especially the Department of Finance and Justice, under the administration of the Hon. Henry C. Ide. It is no small task to take out of circulation some forty million of depreciated currency and substitute one based upon a gold standard, all within the short time of a year and a half.

When we note the difficulties which have hampered other Eastern countries to extricate themselves from the dilemma, in which only Japan seems to have been entirely successful, we can better appreciate the achievement accomplished by the Philippine Department of Finance.

This is only another instance of the application of American methods to problems which other countries have been struggling with for years, and, while we are not egotists, we believe that it has been brought about purely by having a fixity of purpose which has not been swerved from in the face of numerous protests and threatened calamities.

To this same trait in the American character is due the enactment of the Internal Revenue Law. As radical in its features as the currency act, bitterly condemned from its inception by nearly all the commercial interests of the islands, in direct opposition to the old established Spanish custom of not taxing the vices of their conquered races, it was fought to the end by all the affected industries.

But it has been made a law, and the prospects are bright for its success as a revenue earner, despite the prophesied business disasters and failures predicted by its opponents. In time this law will also prove as much of a success, and be recognized as such, as the currency law is at present.

The most notable phase connected with the successful passage and enforcement of both enactments has been the avoidance of any serious jar with the natives, who have shown remarkably good sense in accepting the situation. They are satisfied with the new currency—in fact, they prefer it now to the old. So it will be with the revenue law, after it is in working order and the campaign of the discontents has died away.

THE INSULAR TARIFF REVISION.

Late papers from the Homeland show that considerable criticism has been directed against the administration for the apparent pigeonholing or sidetracking of the report and recommendations of the Tariff Revision Committee forwarded to Washington in the early months

of the year. The circumstance has been used as political capital during the campaign now in progress, and is brought forward to show the insincerity of the administration leaders in matters Philippine. It has been contended that the suppression of this report and the failure to present it to Congress was part of a scheme for avoiding any reference to the tariff until after the elections, and the interests and wishes of the Islands have been coldly sacrificed to the supposed exigencies of domestic politics.

To such an extent did the criticism spread, that the War Department in order to free itself from odious reflection, resorted to the records to set itself straight. The Bureau of Insular Affairs contended that it could not be properly criticized for failure to transmit the documents to Congress, as the matter was taken out of their hands. The records show that the recommendations were received at Washington on April 7th. Congress adjourned on April 27th. The Department officials point out that the leaders of both houses had already decided upon an approximate date for adjournment, and had mapped out all new business that would be brought up in that time, and therefore it would be impossible to consider the recommendations of the Insular tariff revision commission. The Department further states that any delay in transmitting the document to Congress would have been justified by the desirability of having the recommendations reviewed by Mr. Morgan Shuster, the head of the Philippine Customs Service, who was then on leave of absence in the United States. The records show that the recommendations of the Commission were referred to Mr. Shuster, on April 8th, or the day following their arrival, and furthermore that he suggested that he be allowed to take them back to Manila and return them by mail with his comments, and that his suggestion was acted upon. Mr. Shuster sailed from San Francisco on May 7th, taking the recommendations with him, and up to August 19th they were still in his possession.

This in substance was all the information vouchsafed by the War Department officials, and apparently shifted the onus for the failure to transmit the documents on to the shoulders of Mr. Shuster.

While we can not condone any act which might be construed into indifference or neglect of our interests at such a critical time, when the welfare and prosperity of the Islands depend upon the vigilance and activity of those having these interests in trust, we feel that, after a conservative review of all the features connected with the case, it is decidedly unjust to attempt to saddle Mr. Shuster with the apparent neglect; and in reality, when the matter is sifted to the bottom, we fail to see just where blame can be attached to anyone but the leaders of Congress and our determined and ever watchful enemies, the beet sugar lobby, who have persistently blocked all measures in favor of the Philippines.

Governor Taft's Executive Order, No. 100, dated November 25, 1903, appointed a committee to take the evidence of persons interested, to form the basis of conclusions which were to be submitted by the committee within thirty days after their appointment, in the form of a report to the Philippine Commission, as to needed changes in the tariff law, to enable the Commission to recommend to Congress amendments to the law in such particulars as experience had shown the law to be defective, inconsistent with itself, or oppressive in the matter of prohibiting useful importations.

It will be seen from the above that the Revision Committee were limited to 30 days in which to make their report and recommendations, and which could have been passed on through the regular channels and brought before Congress in time. It is also apparent that the recommendations referred to only certain glaring discrepancies in the schedule which, if handled with dispatch, could have been finished in a still shorter period. This appears to be the prevailing idea concerning its import; but it seems that, once the Committee got to work, it did not rest with recommending the revision of prominent inconsistencies, but settled down to

taking testimony and suggestions on every item of the tariff, thus constituting itself into a general tariff revision committee, and lengthening the time required to some ten weeks instead of the thirty days as originally intended. It would seem quite natural that any scheme of such magnitude affecting our only source of revenue would receive the most careful consideration and further revision of those in authority and responsible for the finances of the Insular Government. The recommendations were accordingly given due study and attention by the Commission, and with their suggestions the papers were finally forwarded on to Washington, reaching there on April 7th, or too late for them to stand any chance of being brought before Congress in the remaining short interval before adjournment. It is true that they might have been rushed through, and, by proper backing, receive some consideration at the hands of Congress. But it will be readily admitted by even the most rabid opponent of the administration, that any attempt to force the hand of Congress would have jeopardized the success of other important legislation for the Islands then on the tapis, and which was needed as badly as the revision of the tariff on imports into the Islands. We had the Railway Guarantee bill and the Tariff reduction on Insular exports to the United States before the attention of Congress, both of which measures at the present time being of greater importance to the Islands than the revision of the Insular tariff. We make this statement advisedly. Our crying need is a free market in the United States for the products of the Islands. This is the first and most important legislation affecting our welfare. Given a free market for our sugar and tobacco, the Islands will prosper and our purchasing power increase. We see no good reason that the first consideration should be given home manufacturers, so as to arrange the tariff on imports into the Islands to their satisfaction, and afterwards be refused a similar favor for our products entering the Homeland. If the manufacturers of the United States want the Philippine tariff regulated to benefit their products, let them co-operate with us in securing the abolition of the unjust discrimination against our products in the favor of one trust. Help defeat the opposition of the beet sugar trust and their arrogant lobby at Washington, and they will have earned the support of every element of the Islands.

Pending the successful operation of the Internal revenue law, the revision of our Insular tariff is a very serious matter, and any tinkering with it at the present time, which might mean a marked decrease in customs receipts, without a corresponding advantage by free trade with the Homeland, would be disastrous to our finances.

In view of the great importance attached to the recommendations as forwarded to Washington, and with the certainty that they could not be brought before Congress in the remaining nineteen days, it seems that the Secretary of War requested Mr. Shuster to read the report and make certain comments on them. As the scheme had passed beyond its original limits, and assumed a character of greater importance without having been seen by the Chief of the Insular Customs Service, and affecting as it did nearly every item of the schedule, it is hardly to be wondered at that Secretary Taft requested Mr. Shuster's assistance, and it is also entirely logical to suppose that a scheme which had taken ten weeks to get together, and revised by the government, could not be treated offhand in a few days, even by an expert. This explains why the recommendations came back to Manila. Mr. Shuster was on a leave of absence, and furthermore on his bridal journey, and could very well have pleaded for time; but it is well known that nearly all the time he was in Washington on leave he was on duty nearly every day at the War Department in the interest of legislation for the Islands, and that the larger part of the comments on the recommendations were written on board the steamer returning to Manila.

The recommendations of the Committee, with the revisions and comments of the Insular Com-

mission, and the Chief of Customs, will be placed before Congress early in the coming session, but we can hope for little consideration until some time in the Spring. If the present plan of the War Department is carried out, the recommendations will be published in full and further comments, criticisms, and propositions for changes will be invited from all interested in the subject.

We believe that the revision of the tariff on merchandise imported into the Island will stimulate trade along certain lines, especially to articles of American manufacture, and as such it should receive the heartiest support; but we further contend that this measure should not be precipitated and brought up as a separate piece of legislation without a corresponding benefit accruing to us by our products entering the Home markets. Make the two work in together. It can be readily appreciated that the revision of our Insular tariff on imports into the Islands will receive no opposition from our declared enemies, the beet sugar interests, and that it could be readily arranged to throw our gates wide open, without any adequate return.

THE INSULAR MINING BUREAU

The Mining Bureau of the Philippines, under the able direction of its Chief, Mr. H. D. McCaskey, has been laboring strenuously for the advancement of the industry, and the awakening of a proper spirit of interest in the varied undeveloped mineral resources of the Archipelago. To this end he has compiled from all over the world the catalogs of mining machinery builders and engineering houses, together with a vast amount of commercial data invaluable to the man on the ground seeking information in regard to machinery.

In addition the Bureau has subscribed to nearly all the technical papers of prominence relating to this industry, and, together with the government publications and the private library of the Chief, has formed the nucleus of a most valuable reference library, which is free to the public. A complete card system has been established, and attendants are at hand to facilitate the delivery of books, etc.

A large collection of mineral specimens from all parts of the world, and especially of the Islands, has been collected and classified, and placed on exhibition.

The Philippines offer great prospects for the development of her mineral resources, and that it is appreciated at its full worth is attested to by the large number of prospectors now roaming through the remote regions untraversed heretofore by the white man. The same class of men who discovered the ledges and eldorados of the West and South Africa, have found their way to the Islands, and it is safe to predict that if there is any thing of value to unearth, they will do it. The interior of islands unexplored for four centuries by the Spaniards are now being prospected by these adventurous spirits, and, backed by the surveys and reports of the Bureau, some tangible results are sure to be obtained.

RELIEF TO INSULAR SHIPPING

In the course of his remarks to the American Chamber of Commerce the other evening, Secretary Forbes made clear the position of the Insular Government, in their endeavors to foster and assist the merchant marine of the Islands, and place it on a prosperous basis.

The local steamship companies have been steadily losing trade since the termination of the insurrection. The establishment of an efficient Army Transport and Coast Guard service has seriously impaired their earning capacity and has lost them nearly all of the government carrying trade to the inter-island ports.

They have appealed for a share of this traffic to help them out of their difficulties, and the Insular government has met them more than half way. The Federal Government or the Army Transport service is still holding back.

It is well at this point to look backwards a few years. The insurrection was at its height, and the Americans were striving to stamp it

out and restore order. Troops and supplies were to be transported to various ports and landing places according to the exigencies of the situation. At this critical time, the local companies were as busy and happy as a pup with a rubber shoe. Only the most exorbitant rates could induce them to handle government business, and they got what they wanted. During the days of prosperity, when the coin was rolling in with a musical jingle, they laughed and were merry, and made hay while the sun shone on their side of the street. But never a cent did they spend on repairs to their ships—not they. The music of the coin would cease, and a few might roll away from them.

And peace brought with it a new Americano wrinkle—one they had not dreamed of. Their ships were in a shape absolutely dangerous to the public safety. And then came the Hull and Boiler Inspection Law. And "*alli fué Troya.*" They awoke from their happy dreams and found an efficient Army Transport service catering to the needs of the Federal Government; a fine, brand new, up-to-date Coast Guard service, toting around Insular supplies, and official passengers; and the Americano law which forced them to put their ships in a sanitary and safe condition to handle the public traffic.

And after all this, the "cruel, unjust autocratic Gobierno Americano" has, according to Mr. Forbes, taken steps to cut out the transportation of supplies on vessels belonging to the Insular authorities, and turn the traffic over to the "poor, down-trodden, oppressed" steamship owners.

The sun will shine on their side of the street once more.

In the last number of the FAR EASTERN REVIEW, we published several illustrations of steamers built at the works of S. C. Farnham, Boyd & Co., Ltd., of Shanghai. Amongst them was one of H. M. S. *Kinsha*, a light draft, side wheel gunboat designed for service in the upper Yangtze River. It appears that the *Kinsha* was formerly called the *Pioneer*, and was built by Denny's of Dumbarton for a syndicate of which Mr. A. J. Little, of Shanghai, was the representative. The vessel was then taken apart, shipped to the East, and put together again at Shanghai.

COMMENTS

From *The North China Daily News*, Shanghai.

We have received from Manila No. 4 of the FAR EASTERN REVIEW, dealing with Engineering, Commerce, and Finance throughout the East of Asia. It continues to progress, and the issue before us is in every way a most laudable production. The REVIEW is remarkably completely filled with appropriate news from all available sources in the Far East, and the energy and alertness of its editor, coupled with the numerous reproductions of photographs it contains, make it a very valuable and readable periodical.

From the *Shanghai Mercury*.

We have received Vol 1, No. 4 of The FAR EASTERN REVIEW, which is published in Manila and devoted to commerce, engineering, and finance. It is nicely illustrated and contains a number of well written articles, amongst them is one on the Dock and Works of S. C. Farnham, Boyd & Co., with a number of illustrations. It is printed in good clean type and ought to have a wide circulation.

We have received the September issue of the FAR EASTERN REVIEW, published at Manila. This brightly illustrated periodical continues to improve on every publication.—*Straits Times*.

THE FAR EASTERN REVIEW for September contains an excellent history of S. C. Farnham, Boyd & Co., Ltd., profusely illustrated, which alone is worth the price of the magazine.—*Shanghai Times*.

THE MINERAL RESOURCES OF NORTH CHINA

(Continued from page 3.)

rience, unless they could gain something themselves. Chili is open to foreigners for mining purposes on the condition that the concession be half foreign and half Chinese. The principal terms on which concessions are granted stipulate that the application must first be placed before the Governor General at Jehol, according to the Jehol mining rules and regulations, which are attached hereto, and the Chinese Government shall receive six per cent of the amount of gold yielded. A local mining board has been established at Jehol, where all the mining business of that district is transacted.

Two concessions have been granted on the above basis. An American made an application conjointly with a Chinese subject for a concession named the Chang-tze-kou, in the Lan-ping-hsien district, North Chili. This was granted by the Way-wu-pu, in July, 1903, and the proclamation was issued to the people by the Governor General, in August, 1903. About the same time another concession, also in the Lang-ping-hsien district, was granted to a German and Chinese subjects conjointly. Both concessions are governed according to the Jehol mining rules and regulations.

It is evident to those in this country that the long delayed interest in its mineral resources has set in, and it is with considerable confidence that one predicts an enormous boom in the industry, as soon as some of the gold-bearing districts are systematically exploited and regular returns forthcoming.

So much indiscriminate digging has been done, that in many places deep sinking will have to be resorted to.

The present condition of the mining industry outside the Great Wall offers unusual facilities for exploration and reduction. Progress in the past has been slow, with the result that the gold fields have achieved no prominence.

The earliest discoveries of alluvia were made in the drifts that fill up the valleys, and cover the plains at the foot of the mountains, and a large proportion of gold is still derived from this source. In places, the wash or gravel varies from two to four feet in thickness, the average contents yielding from twenty to thirty cents per cubic yard. Most of this alluvial has been worked for centuries, and it would not be profitable to work any old deposits (that have been already exploited by the natives) with foreign methods.

Considering the condition of the roads and rivers, transport in North Chili is exceedingly cheap. Native carts, capable of carrying over one ton, can be had at the rate of \$4.00 per diem. They travel on an average of twenty-five miles per day, and it is only in the rainy season that any delays occur. For river navigation flat-bottomed boats are readily secured, which carry over two tons and up to five tons, when the rivers are in flood. The cost per boat capable of carrying two tons is \$4.00 per diem. All machinery would have to be packed, and boilers, etc., sent in parts. Boats going upstream make about twelve miles per day.

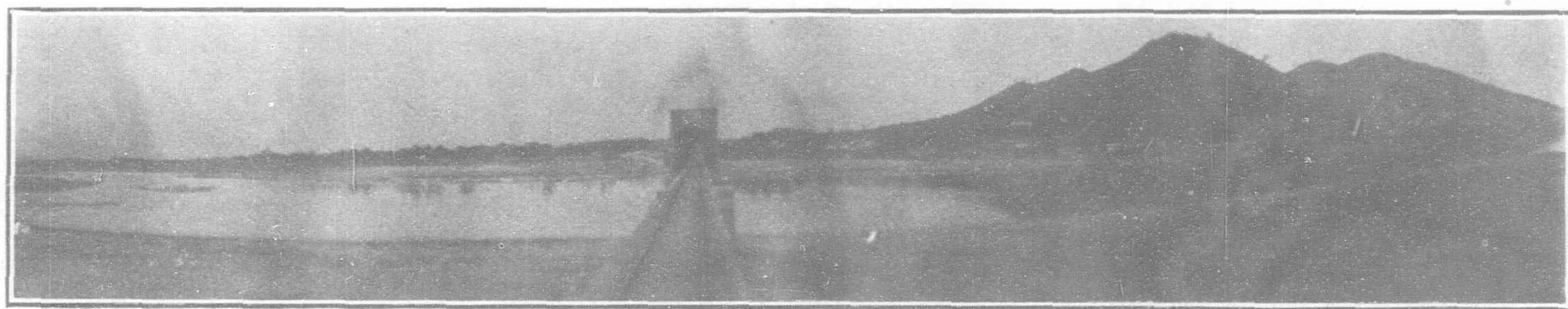
present there are no markets excepting the towns and villages. Equipment and transport would exceed in cost the best coal to be obtained at the nearest port. However, this native coal will be very useful for the operation of gold mines. A small coal mine, sufficient for all purposes, can be opened and worked cheaply by native methods, and the cost landed at the mine over the most difficult routes should not be more than twelve dollars per ton.

The country outside the Great Wall is mountainous and barren, excepting the growth of a small scrub. It is therefore an easy matter for the prospector to locate the outcropping lodes and veins. When a concession is granted, and the company intend sinking shafts, or build houses, etc., the land in question must first be bought, and to save disputes a price is fixed by the local authorities.

Water is abundant, and even in the depth of winter a supply can be had sufficient for all purposes.

Timber is scarce. The Wei-chang has a small belt, but in a few years this will be finished.

Mining costs in Chili may be roughly estimated thus: With a stoping width not less than three feet, and where there is not an excessive amount of dead work, the total cost of mining will be from three to four dollars per ton. This will cover all ordinary costs, but would be exclusive of new crushing machinery, boilers, winding engines, etc.



CHINESE IMPERIAL RAILWAYS: LAN CHOU BRIDGE.

The native methods of working the reefs and lodes are primitive. Small shafts are sunk to a depth of 20 to 50 ft., and overhand and underhand stopings are then commenced. The ore is carried to the surface by baskets on the backs of coolies. These shafts are nearly always sunk within twenty feet of each other, and little or no timber is used. Sometimes a three inch diameter prop will be found here and there in the workings, where it is actually impossible to get up or down the stopes without some support; or a small pillar is left to support the ground. Most of the old workings, however, have caved in. This does not refer to mines that are under foreign management.

The ore, after carried to the surface, is picked and carried to a stone mill, or arrastra, for pulverization. The mill consists of a circular granite slab, ten feet in circumference and fifteen inches thick. In the center is an upright pole, to which is attached a roller of granite in such a manner that it revolves on the granite slab, and trams are attached to the roller in such a way that a mule can be harnessed to it for giving the driving power. The crushing is similar to grinding corn. After crushing to a certain fineness—no screens being used—the natives then wash the crushed ore on a small wooden apron or table, usually five feet long by two feet wide. About one hundredweight of ore is washed daily, when in full working order. No quicksilver or other chemicals are used to get a closer extraction—in fact, the use or knowledge of the latter is unknown here.

Prospecting will be comparatively easy in this gold field, as the outcrops in most cases can be traced to a considerable distance.

Chinese merchants who have obtained permits to open mines in North Chili, through the Governor General at Jehol, and who lack the necessary capital to develop same, usually let the mine or a part thereof out on tribute. The tributaries have to pay all working expenses, and the gold yielded must be sold at a fixed price to the concessionaires. The latter pay such a small price for the gold at Jehol and other places, that the tributaries sell only a small part of the yield to the owners, and take the remainder to a market where they can obtain a higher price.

At Tientsin-Fu, the Viceroy of Chili has his headquarters, and governs the southern portion of Chili. Cheng-te-fu (Jehol) is the official residence of the Governor General, who governs the northern and eastern parts of Chili.

Coolie labor in North Chili is plentiful. The pay of an ordinary Chinese coolie varies from twenty to thirty cents per day, and a miner or carpenter from thirty to forty cents. No food or lodging is provided for any of the Oriental workmen. Under the supervision of foreign mechanical engineers, Chinese operate most of the hoisting and pumping engines in Chili, and no serious accidents have yet occurred. After overcoming the difficulties usually placed in the way of a foreigner introducing something new, the Chinese are as capable of receiving instruction as the European would be who had been brought up without any knowledge of our methods. A northern Chinaman is very conservative.

Coal is abundant in North Chili, but at

THE JEHOL (CHENG-TE-FU) MINING RULES AND REGULATIONS

(1) *Office for sending petition in.* It has been memorialized to the Throne, by Jehol, that the Chu-chi-chu office is established, and an office for mining affairs is included. Merchants applying to open mines must have their agreement and amount of capital examined. This should always be sent into the above mentioned office (the Chu-chi-chu), and no applicant is allowed to visit the Deputy in his private house, or to try and arrange privately with any of the official staff, so as to put a stop to all deceptions and bribery. (Sending reports or remitting revenue shall be in a similar manner.)

(2) *The Wai-wu-pu has been notified.* Petitions regarding to mining applications sent to the Wai-wu-pu must be clearly inspected by the Governor General of Jehol, and if found that everything is correct, responding to the Jehol mining regulations, the General will accordingly dispatch same to the Wai-wu-pu for approval; after being approved by the Wai-wu-pu, the pass or permit may be given to work the concession. Any merchant or merchants making application through the Wai-wu-pu, the said Wai-wu-pu must dispatch cases of such kind to the Governor General at Jehol, for approval. After an approved dispatch has been returned to the Wai-wu-pu, then the permit may be recognized as a proper proof of working the mine. No matter whether the people of Mongolia or others object, they have to obey same.

(3) *To announce capitals.* Capital for opening a mine. A clear statement must be made

in the application to the Governor as to whether the capital is foreign or Chinese, and no false statements must be made.

(4) *Showing foreign agreement.* If a rough agreement is made, and capital obtained of which is under a foreign loan, or foreign share, and the application is sent through the General, or through the Wai-wu-pu, if the terms are not agreeable to the mining regulations and impossible for the Imperial Government to admit same, they cannot hold the rough agreement as a certificate.

(5) *To announce the four directions of the boundaries allowed.* Formerly applicants used to give false names of places, in order to speculate with other mines. For example, take the Ping Chuan Coy—they have already had their original concession, and applied for the Pa-Kou mines, etc.; also the Chih-Feng Coy have had their original concession, and applied for the Ha-Ta mines, etc. Thus disputes are easily raised up one against another, and cause an unlimited case. Hereafter, before a mine is approved by the Governor General and allowed to commence work, the situation of the four directions of the concession and the distance from the townsite of the local magistrate must be clearly stated in the petition, and a plan showing same must accompany petition, in order to enable the sending of a Deputy to the place for inspection, so as to prevent disputes.

(6) *To send deputy for examination.* Any person or persons applying to open any mines, no matter whether he or they have applied through the Wai-wu-pu, and same been dispatched to the Governor General, or applying

the person or persons concerned will be at once denounced to the Throne.

(8) *To point out the boundaries of the ground applied for by merchants for mining purposes, marks will be placed at the different points of the limits of ground applied for.* Hereafter, should any person apply to open a mine, he shall point out and name the place. A large mine is twenty li, within the limit above mentioned, and a small mine is ten li, within the limit; and not to point out several places at the same time, beyond the limit. If the place applied for is opened, and the revenue increased, application may be made to open other places, after inspections are made, and, no objections raised, permission may be granted for opening another mine.

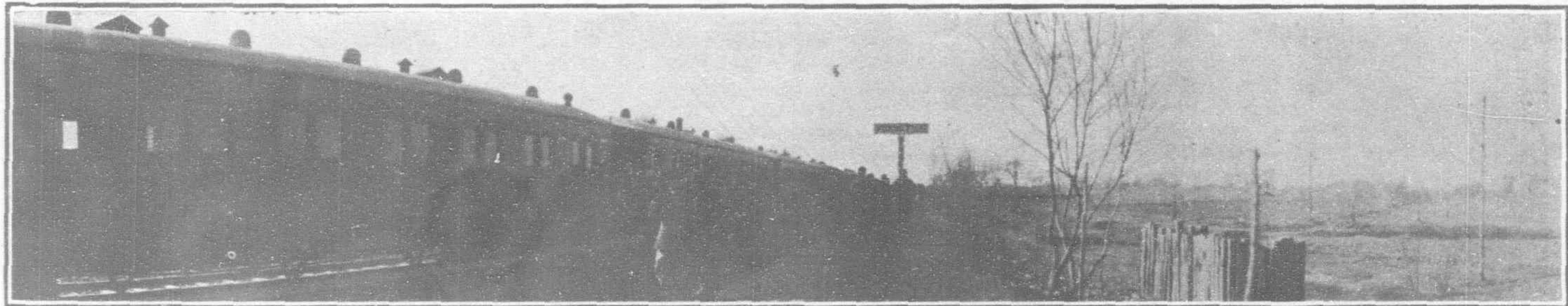
(9) *Marking clear the boundary limit.* When the limit of the boundary is arranged, the mining ground must be clearly divided. If two mines are connected together, disputes cannot be avoided. Hereafter, a new mine is not allowed to work into the limit of the old mines boundary, so as to put a stop to such disputes.

(10) *To distinguish between the old and new mines.* Those of the existing old mines that have been stopped, owing to low grade ores, and others that have been sealed by the deficiency of funds, therefore, the mines are returned to the public, and not to be held as their lawful property. If fresh application is made by other people, it does not concern the old applicant. However, the fresh petitioner must give a clear statement, in order to enable the officials to find out the old applicant, as

will also pay the Mongolian Tartar a certain amount, to be called mountain shares. At the present time it is decided, should any new mines be opened, that they shall, according to these presents, consult with the Mongolian princes for the amount in shares, and report the same to the Mining Board at Jehol, for record. The latter will receive a certain amount as revenue, so as to pay the deficiency of tax.

(13) *Mines to be opened by the officials and their staffs, who are under the Governor General at Jehol.* There are so many cases of extortion and bribery going on while a mine is being worked by officials and their staff, that all such practices must be put a stop to. If any of the officials or their staff wish to open a mine, notification must at once be forwarded to the Wai-wu-pu, so that the official in question can exchange his position to other Provinces, and his staff must resign their positions to others. Then, if no other objections are raised, permission may be granted to open the mine, and, as to accepting bribe shares, this should be strictly stopped by all officials.

(14) *Rules for collecting the revenue from mines.* When a mine is taken up on trial, a certain limit of time will be given to prove same before increasing the tax. Half a year at most or three months at least will be granted on gold and silver mines which have smelted any gold or silver within this limit of time. The tax on all mines will be paid into the Mining Board office at Jehol, as revenue. Sometimes mining companies do not report fully and truly the yield of gold and



CHINESE IMPERIAL RAILWAYS: HWANG TSUN STATION.

direct to the General, must always notify the mining affairs office (Chu-chi-chu, at Jehol) to order the local magistrate to make a clear inspection of the matter, whether it interferes with the concession of other property or not. If the property is situated far from the magistrate, then a Deputy may be sent for inspection. All will be settled when a report is sent in by the Deputy. Should any false reports be sent in, the Deputy will be solely to blame. The traveling expenses for the Deputy are to be paid by the mining office, and he is not allowed to take any money or presents from the applicants, and should it be discovered that this regulation has been disobeyed, the culprit concerned will be severely dealt with.

(7) *Official trial of opening the mining properties of Jehol.* At the present time, the Government being so short of funds, and to be solely dependent on merchants is not sufficient to increase the revenue current, . . . hereafter, should any rich mining lodes be found, and are not being worked by any merchant or company, or which had been worked and closed by their own accord, a manager may be appointed by the Mining Board of Jehol, to open these mines by native methods, the amount of which will be paid according to the proposed development. Notification must first be sent to the Board of Revenue, Peking, to consider the matter. All the profits will be paid to the Imperial Government, if any, and said mines may be enlarged after proposed development has been completed. After one year's time the said manager will be recommended to the Throne, and to be paid with a fair salary. Should any practice of bribery or extortion be found,

to whether there is any unpeaceful circumstances or not, so as to prevent complaints. Machinery and buildings that are bought and constructed by any former mining company, if found in good condition, and can be put to further use, also which have not been confiscated by the officials to repay any short payments accruing to the public revenue, a reasonable price will be made for the said machinery and buildings for the successor to buy.


(11) *To prevent private transfers between the officials and merchants.* When a concession is granted and a mine opened, and the applicants have exhausted all their capital, or owing to the shaft being too old or the lodes are barren, applicants should send in their petition at once, and ask to seal up the mine. They are not allowed to transfer the mines to any other persons by a private system. Should the owners wish to put additional shares or transfer to other persons, cases of such kind must be announced beforehand, and without any extortion or bribery; also to act according to these presents, to take the same case as if applying for a fresh concession. The usual permit will be given, after notifying the Wai-wu-pu; also the applicants will have to pay another amount of pledge money, \$1000. Thus will the successive applicant be allowed to open the mine. Should it be discovered that this regulation has been disobeyed, the culprits concerned will be severely dealt with.

(12) *To pay for Mongolian ground or mountain shares.* The four eastern sections of Jehol are all properties of the Mongolian princes, etc. They used to collect the revenue and taxes of the land. An applicant, besides paying the Imperial Government revenue,

silver received by crushing or other process for a long period, but pretend that they have stopped work; and, whenever the General urges the company to apply and seal up the mine, the owners or company thereof state that they are just opening up. So much of this business has been practiced, that hereafter, when a mine is granted to merchants to open, from the date of issue of the proclamation the revenue must be increased, by returns from the mine, by the end of the first half year. If over six months and the revenue has not been increased, it is proof that the lodes are not profitable, and the Government will command the mining company to apply for the mine to be sealed up. If the stone is hard and the lode is at a depth, and no false reports made thereof, or evading the tax, the limit may be extended another six months. The government tax has to be paid as soon as any company starts smelting gold or silver.

(15) *Pledge money.* According to the old rules and regulations, the pledge money for gold and silver mines was three hundred taels for each mine, and fifty taels pledge money for a coal mine. Hereafter, according to these presents, it is necessary to increase the tax. Where Chinese and foreigners work a large mine conjointly, for each large mine opened the applicants must pay one thousand taels, as pledge money. Any person opening a small mine with native methods must pay three hundred taels as pledge money. After the permit has been given, and a company has worked the mine for six months and paid in no revenue, the merchant can make application for the mine to be closed, and half of the

(Continued on page 9.)



THE JEHOL (CHING-TE-FU) MINING RULES
AND REGULATIONS

(Continued from page 7.)

pledge money will be returned. If you request the limit to be extended another six months, and when the re-extended limit is up you again request to seal the mine, then only two tenths of the pledge money will be returned. If you have gone beyond your limit, without reporting to the Government, the merchant will be forced to seal the mine, besides losing all his pledge money. If there is any deficiency in your revenue, the amount of deficit will be taken from the pledge money, then the merchant or company will have to make up the full amount of pledge money to the Government. The guarantee will be held responsible for the pledge money of the coal mines.

(16) *To remit the permit fee.* A new regulation has been decided through the Wai-wu-pu, and sanctioned by the Throne. Any merchant or company applying for a permit, must pay the regular fee. Hereafter, for any mines that are granted, a *permit* will be given. The amount of the fee to be paid will be in accordance with the amount of the capital of company, more or less, *one hundred taels* for a large mine, and *fifty taels* for a small mine, so as to pay the expenses of the Mining Board at Jehol. In future, when a mine is shut down, the original certificate should be returned and cancelled by the Mining Board office, so as to prevent transferring under false pretences.

(17) *Temporary decrease of the mining tax.* According to the old rules and regulations, the mining tax collected was two or three tenths, from every tenth more or less. Therefore, owing to this heavy tax, if a company will not make the practice of evading the tax, they will surely close the mine, not the least benefit being found thereby. The Governor General has memorialized the Throne, that for every hundred taels of gold produced, six taels of gold will be paid as tax, and that for every hundred taels of silver produced, eight taels of silver will be paid as tax. This has been authorized by the Mining Board at Peking, that the amount of tax to be paid by the gold and silver mines of Jehol shall be carried out according to these regulations—at present, but only as a temporary trial. This tax can be increased at any time when the mines are developed and found profitable.

(18) *In order to benefit the poor people.* The lands of Jehol are barren and the people are poor. There are many lodes and veins in this district, but merchants with small capital who open the veins at the mountains have to obtain loans for food expenses, and usually repay loans when the ore is crushed and yields obtained. The poor have done a considerable amount of work daily, and in most cases have only gained sufficient for food, while merchants could only obtain very small profits....Therefore the work is stopped and the mines abandoned. This is not to be compared with those that are opening with large capital. If we command the small merchant to apply for a permit similar to a large company, it is impossible for the poor people to compete with capital. Accordingly, the poor have nothing to depend on, and the Government is afraid that they may habit themselves to robberies, and this must be duly considered by the Governor, to do as he may think fit and proper. Merchants of large capital should act according to these rules and regulations, when applying to the Board for a permit, whereas the merchant of capital should act according to the old rules and regulations, to put three hundred taels as pledge money for gold and silver mines. Permits will be given by the Governor after due investigation of the said applicants.

(19) *Strict caution against evading the tax.* The amount of gold and silver in mines is easily kept secret. Hereafter, should any merchant or company be found evading the tax, the said merchant or company will be fined five times the actual amount of tax purloined. This rule must be strictly adhered to, no matter whether you are a Mongolian, Chinese, or foreigner. Should any venture to

disobey this rule, the mine will be forced to seal up.

(20) *Monies taken from the tax for mining board office affairs.* Expenses for establishing the Mining Board office at Jehol, salaries for staff, travelling expenses for inspecting mines or investigations, etc., which had been memorialized to the Throne previous to this, no matter what amount is taken from the tax, two per cent will be taken as office expenses, and will not be cancelled.

(21) *Surplus profits of mining companies.* The profits obtained by mining companies, should act according to the rules and regulations of the Mining Board, Peking. Should there be any surplus, 25% thereof shall be paid to the Imperial Government as a royalty.

(22) *Strict investigation for brigands.* The employees of the mines are so numerous, that there are good and bad characters employed. Disbanded soldiers and robbers may sometimes join the mine, and it is impossible for the mine officials to distinguish one from the other; also it is difficult to get into the mine to investigate, therefore the mines have become a haven for the fugitives. Hereafter, strict rules must be made, if any fugitives are harbored and discovered by the Yamen detectives, the said detectives will immediately send a report to the local authorities, or to the military officers; also a secret announcement must be given to the mining company, so as to allow the detectives to go into the mine for an actual investigation, at the time that they shall consider best, whether to command the mining company to hand the culprit to the detectives, or to be arrested by the detectives themselves. On no account must the company give assistance so as to enable the culprit to escape, or protect him in any manner or form, nor must any violence be used towards the detectives while carrying out their duties.

(23) *Appointing deputy for investigation.* An occasional inspection will be made by a deputy, for a small mine. A permanent deputy will be sent to reside at a large mine. A house will be furnished for the deputy by the mining company, to be used as the deputy's office. The said deputy has the power to inspect accounts of the company, such as the amount of the daily yields of the gold and silver. For the actual amount of tax to be paid, a report will be made by the company and the deputy, which will be sent at the end of each month to the Mining Board office at Jehol. Should any false statements be made by said company, a private report may be sent in by deputy, with his own title, so as to have proof for further investigation and fine. If the deputy speculates in self interests and practices the same concealment with the company, if discovered, due investigations will follow, and be severely dealt with. After a certain amount of tax has been collected, remittance must be made at once, and not to cause any delay. As to the amount of salary to be paid to the deputy, this will be paid by the Mining Board at Jehol, who is not allowed to take any bribes whatsoever from the mining company.

(24) *To spare soldiers from the government for protection.* Different kinds of workmen being employed by a mining company, a proper guard of soldiers is necessary for protection. Application must be made to the General for appointing soldiers for a company. Expenses for drilling, pay, etc., must be paid by the said company, and to be paid monthly. If the company enlist soldiers themselves, they must first petition the General. A clear name list must be sent in every season, so as to enable the Government to inspect and examine them.

The above articles are made according to the present condition of affairs at Jehol. All other clauses will be carried out according to the rules and regulations of the Mining Bureau of Peking. Should anything occur that may not have been provided in these regulations, due additions and erasures will be made in order to best suit the conditions of things.

No other Provinces must adopt these Regu-

lations. They were drawn up solely for the North Chili fields.

NEW FIBER MACHINE

A new invention, which may have the effect of revolutionizing the decorticating of fibers, has just been completed by Messrs. Hogan & Co., Singapore. The initial exhibition was given at Messrs. Hogan & Co's works. There were two machines on view, one for decorticating the article and the other for combing and cleaning the fiber. The capabilities of the machines were shown by Mr. Schwemmer, who gave the fullest explanations as to the process and the results which might be expected, dwelling particularly on the simplicity of the mechanism. The great claim for the machines is their simplicity of construction, combined with their efficiency in producing a first-class marketable article. The absence of any intricate parts or processes enables the manufacturer to dispense with highly trained services. The ordinary laborer can quite easily, it is claimed, work the machines and obtain the best results. At the special exhibition, the operator showed fibers being obtained from pine-apple, pandanus kaida, bromelia pinguin, aloes (agaves), various ramie, sansevieria gigantia or murva, etc. Excellent fibers were obtained from these products, and, after passing through the combing and cleaning machine, they proved to be of fine quality and texture. Application has been made for patent rights, and, when these are obtained and new machines have been erected, a public trial will be given.—*S. Times*.

HONGKONG PUBLIC WORKS IN 1905

At a meeting of the Legislative Council, September 15th, the Appropriation Ordinance was introduced and read for a first time. Among the items of expenditure are the following, relating to public works extraordinary in 1905, which will be of interest:

Bacteriological Institute.....	\$ 30,500
Central Police Station, additional storey to	13,000
Disinfecting Station, Kowloon, including quarters for Inspector and Office for Medical Officer of Health.....	4,200
Government Civil Hospital, extension to staff quarters.....	20,000
Gunpowder Depot, Green Island..	50,000
Harbor Office..	43,000
Law Courts.....	160,000
Markets:	
Mong-kok-tsui	5,000
Western.....	67,000
Post Office.....	185,000
Do. Shanghai.....	15,000
Prison	10,000
Public latrines and urinals.....	12,000
School, Yaumati.....	12,000
Tai Po, quarters for officers	15,500
Volunteer Headquarters (contribution).....	5,000
Drainage Works:	
Gullies re-construction.....	10,000
Training nullahs.....	20,000
Miscellaneous drainage works	45,000
Gas Lighting, extension of.....	2,500
Miscellaneous works.....	35,000
Reclamation, Tai-kok-tsui.....	20,500
Public Health and Buildings Ordinance, 1903:	
Compensation.....	20,000
Insanitary property resumptions...	150,000
Roads:	
Forming and kerbing streets.....	40,000
Kowloon Roads.....	20,000
Road across King's Park, store account.....	100
Waterworks:	
Albany filter beds, alterations and repairs	20,000
Kowloon Waterworks gravitation scheme.....	350,000
Miscellaneous Waterworks.....	20,000
Peak supply and reconstruction of No. 2 tank.....	10,000
Tytam Tuk scheme.....	400,000
	\$1,815,300

RAILROADS

EUPHRATES VALLEY RAILWAY

(*Hongkong Daily Press*, 26th July.)

Much has been written on the connection of India with the Mediterranean by rail since, some seventy years ago, Major, afterwards Lieut.-Col. Chesney, first mooted the project of a Euphrates Valley railway. For various reasons little has, however, been done. Although with an instinct, not altogether untrue, Lord Palmerston always opposed the then French project of the Suez Canal, and openly expressed his preference for the railway, many obstacles intervened, which prevented the latter ever becoming *un fait accompli*. Equally imperial in his ideas, but infinitely more astute, Lord Beaconsfield seized the opportunity offered of obtaining a predominating interest in the affairs of the Canal, and as the Canal did for the time serve all purposes, and actually formed the quickest means of communication with India, England was very well content to let matters rest, the more especially as in the meanwhile she had become practically possessed of the political control of Egypt. It was not, then, till Russia succeeded in constructing a line through Siberia to Eastern Russia, and England's rapidity of communication with the Far East was challenged, that the old topic again forced itself into consideration in Great Britain.

Inspired with emulation on the successful attainment of her object in the completion of her new line to Eastern Asia, which Russia saw would enable her to interfere with greater ability in the affairs of China, whose fertile lands had already aroused her insatiate greed, Germany thought the time had come. She accordingly traced out a line to continue her present system in Western Anatolia to the mouth of the Euphrates, and obligingly asked England and France to assist in the financing. At first, thinking that the formation of the railway would tend towards rendering Germany independent of Russia; and that in her own interests she would feel disposed to restrain any further encroachments of that Power, England and France were disposed to lend a helping hand. Such, however, was far from Germany's intention; and on its being suggested to her that she would be required to undertake that no preferential treatment would be permitted, and that both countries should be adequately represented on the direction, she declined both proposals. This rendered the assistance of either out of the question, and the scheme eventually collapsed. Preferential treatment for traffic from Central and Eastern Europe was, in fact, the backbone of the affair, and every obstacle was to be placed in the way of traffic from the two western countries. Its collapse, however, has had the useful effect of once more attracting English attention to the subject, but as yet without the result of bringing forward any notable scheme. With Russia, in fact, dominant in Armenia, there is but little ground left, and any line starting from the eastern extremity of the Levant would offer few advantages over present routes to compensate for its political drawbacks. An extension of the present Egyptian railways to Suakin has indeed been suggested, and would undoubtedly shorten by some eight hundred miles the present sea voyage to India, but half the Red Sea would still remain to be traversed, and it is very doubtful if the bare advantage of shortening the ocean voyage would compensate for the extra expense of making practically a new port, in addition to the breaking of the voyage. Under existing political conditions no port south of Suakin is feasible, so that apparently the Empire must wait for some very decided change in the political position before England will be able to acquire for herself a practical land communication with her greatest dependency.

Recent improvements in land locomotion have thus not been altogether in favor of England, and she has had perforce to stand by while other nations, by nature more favorably situated, have been enabled to take advantage of those opportunities. It was, of course, by

taking timely advantage of the ocean that Great Britain was able to consolidate her great possessions in the East; she has momentarily found the record for speedy delivery of the mails in the Far East passed out of her hands, and this, though as long as she possesses in her own hands the telegraphs and the command of the sea, is of secondary importance, yet is not consonant with the position she holds amongst nations. Naturally, then, as the present contract for carrying the Eastern mails is on the verge of expiry, the British Government had hesitated in renewing it on present lines, although for the moment it has insisted on shortening the time for delivery in the East by some twenty-four hours. In view of the changes made elsewhere this expedition seems but a small matter; but, as it involves sea carriage at the rate of some seventeen miles an hour, it is evident that on existing routes the limit of acceleration has been almost reached, and is already in sight. An Austrian engineer has proposed a new route, traversing the Khanates of Central Asia, and then climbing the Pamirs and reaching China by way of Kashgar or Yarkand. In the present position of the political world such a line would be controlled by Russia, and would, of course, be principally used by her for aggressive purposes. We know from her present management of her line through the Khanates what that would imply for travelers other than Russian. A line over the Pamirs, where the passes are upwards of 16,000 feet high, involves engineering issues quite beyond our present experience. As far as England is concerned, the line may at once be ruled out of the competition, which must be confined within the limits of 15 degrees and 35 degrees north latitude. The proposed German line between the 40th and 30th has already for reasons mentioned been declined, so that practically no alternative is left except a line of railway crossing Arabia. A very few years ago, both physically and politically, such a line could not be considered as within the limits of practical politics, but events have been marching, which certainly have a tendency to remove the most formidable of the difficulties. In 1863, when W. G. Palgrave crossed the whole breadth of Arabia from the Red Sea to Bahrein in the Persian Gulf, he found a well watered country, admirably suited for the construction of a railway. At the time it was dominated by the rule of the fanatical Wahabee dynasty, but the inhabitants were weary of the bigotry of the rulers, and the kingdom was already decadent. Since then Wahabee influence has still further declined, and of late years has not attempted interference with commerce. Palgrave found the people everywhere keen traders, and had no difficulties with the people, who indeed throughout screened him from the minions of the government. Now within the last three years, without any conscious effort on the part of the Indian Government, our relations with these tribes have entered into a new phase; Turkey recently has been encroaching along the Eastern Coast, which came to a climax last year, when by the attempted closure of Koeit we were brought into unpleasant contact with the intruding Turkish fleet. As we had always communicated with the ruler of Koeit as a perfectly independent potentate, and as under his friendly auspices relieved from Wahabee interference British trade with the interior of Arabia had been largely increasing, the commander of the British fleet had orders if necessary to interfere by force of arms. The result has been the growth of a markedly friendly feeling, and an expressed desire to facilitate intercourse.

Now it so happens that this track across Arabia from Bahrein to Mejaz on the Red Sea is actually the most ancient trade route of which we have knowledge; it was by this route that some seven thousand years ago civilization was introduced into ancient Egypt, and it was by this road that bronze first found

its way to Phoenicia, and thence by Tyrian and Carthaginian traders was carried all through Europe. The opening up of the route would then be only a return to primitive conditions. From Alexandria to Bahrein by this road would be about 1,200 miles, and from Bahrein to Karachi about 1,100, so that the total distance from Alexandria to India would be about 2,300 miles, as against some 4,600 by the ocean route. The saving of time from the substitution of railway for steamer transit would be in a greater proportion.

The subject of a trans-Arabian railway is not of course one that stands out self-recommended for immediate adoption; on the contrary, like the Cape to Cairo project, it is one where much opposition and many serious difficulties will remain to be overcome before it even enters in the arena of practical discussion. Still, however inchoate, it is hoped that, like the other, first launched as an almost quixotic essay, it may be influential in directing men's minds beyond the immediate present to what in the present ever changing world of politics may shortly become a potential eventuality. If the Cape to Cairo route, but two years ago nothing more than the baseless fabric of a dream, has already advanced to bridging the Zambesi, why should its legitimate supplement, a railway from Cairo to Calcutta, be refused at least a fair discussion?

PENANG RAILWAY TERMINUS

The *Perak Pioneer* gives particulars of the edifice which is being erected in Penang by the F. M. S. Railway Department, at which place it has been decided to make its northern terminus. The plans were prepared by Mr. A. B. Hubback, the Architectural Assistant to the Director of Public Works. The block is to be three storeys high, surmounted by a clock tower, the top of which will be 150 feet from ground level. Its length, bordering on Church Street Ghaut, will be 242 feet, and its depth 48 feet. Lee Ah Kong has secured the contract for \$166,800, exclusive of ironwork and tiles, and the completion of the building has been fixed for 31st January, 1907. On the ground floor an engine pump room, kitchen, left luggage and tiffin rooms, bar, lavatories, station master's office, telegraph and booking halls will be provided. The booking hall faces Weld Quay, and entrance to it will be through several ornamental iron gates. On the first floor accommodation is made for offices, including one for the Traffic Inspector. It is said that a number of them not used by the Railway Department will be rented out. On the second top floor there will be further offices and a lavatory. A Traffic Inspector, who is to live on the premises, is here provided with bedrooms, a sitting room and a bathroom. Above the second floor a tank is to be installed, from which water will be provided to all the lavatories and bathrooms in the building, the water being pumped up to the tank by the engine situated on the ground floor. Another feature will be a lift communicating between the top and bottom floors. In addition a circular iron staircase will lead visitors to the clock-tower. The clock, which will dominate George Town, will have four faces, each eight feet in diameter. The principal bell giving out the hours will be one weighing two tons. Mr. J. McKenzie, who resides in Penang, will supervise the work under the direction of Mr. H. C. Barnard, the Acting Divisional Engineer.

THE SEOUL-FUSAN RAILWAY

Steps have been taken to complete the entire line of the Seoul-Fusan Railway during the course of this year. Work on the tunnels at Pusang, Kyong-sang-do, and Cheung-yak, Chhung-chhong-do, can not be finished within the current year, but, to meet the pressing need, an improvised line will be laid over the mountain. Excepting in a few instances, very slight loss had been inflicted on the company by the repeated raids of the enemy's squadron.

CHINESE RAILWAYS.—A Peking despatch says that Shang Suen-huai has recently urged the Central authorities to persuade the wealthy natives to subscribe liberally to the shares of the proposed Shanghai to Nanking Railway, which shares will shortly be placed on the market. In this connection the Peking correspondent of the *Tokio Asahi* states that the British and French efforts to obtain the right of constructing the railway between Szechuan and Hangkow have failed, and that the work will be undertaken by the Chinese Government itself. In addition the correspondent says that the French Consul at Chungking subsequently asked the Chinese authorities for permission to engage French engineers, but his request was also refused.

HOKKAIDO-OTURO RY, JAPAN.—Work on the Hakodate-Otaru line, a distance of 156 miles, of the Hokkaido Railway, is being pushed forward vigorously. Rails have already been laid on the Hakodate to Neppu section, 86 miles, and on the Otaru to Ozawa section, 32 miles, so that only the middle section of about 40 miles remains to be completed. The above line was originally intended to be opened to traffic toward the end of next year, but it was subsequently decided to complete the work by the end of next October. At present eleven locomotives are running on the above sections, and on the completion of the whole line six more will be added.

RAILWAY SLEEPERS, JAPAN.—The export of railway sleepers from Hokkaido is steadily increasing year by year, the majority of the sleepers being shipped to Niuchwang, Taku, Fusun, Chemulpo, Talienshan, Tsinhwangtao, Kiao-chow, and other places. The following table shows the exports for the past two years:

Quantity. koku.	Value. yen.
1902 254,993	500,171
1903 480,683	900,417

The exports in 1903 show an increase of 254,000 *koku* in quantity and over 400,000 *yen* in value, as against those of 1902. In spite of the war and the consequent interruption in shipping business to North China, considerable quantities of sleepers were exported to Korea during the first half of this year, as shown by the following table:

Quantity. koku.	Value. yen.
First half of this year 212,197	414,340
First half of last year 165,430	308,323

The figures for the six months of the present year show an increase of over 4,600 *koku* and over 100,000 *yen*, compared with the corresponding period of last year.

THE BELGIAN SYNDICATE.—According to the *Tokio Asahi*'s Peking correspondent, the Peking syndicate has ceded all the railway concessions in its possession to the Belgian syndicate, owners of the Peking-Hankow Railway, at the price of 13 million taels. The Belgian syndicate, moreover, recently purchased from the Americans the major portion of the shares of the Hankow-Canton Railway, so that this syndicate has now obtained the control of nearly all the railways in China.

GOVERNMENT RAILWAYS, JAPAN, August 29.—The construction of the Maizuru line of the Government Railway is making fair progress. Work is already completed on the Fukuchiyama to Nishi-Maizuru section via Ayabe, as well as to the seashore from Nishi-Maizuru, and along these sections the materials for construction are conveyed. The remaining Higashi Maizuru section to Nishi-Maizuru, it is expected, will be ready for traffic by the end of the present month. The slow progress of the work on the last-named portion is due to the boring of the Shiratori tunnel, which is some 430 yards in length.

The United States Cast Iron Pipe and Foundry Co. recently secured some large contracts for pipe for shipment to the Philippine Islands.

PROPOSED NEW PEAK TRAMWAY, HONG-KONG.—For some time the Colony has been awaiting with interest further particulars of the scheme for the construction of a tramway, which it is proposed shall be a double line track about one mile in length, commencing at the lower end of Battery Path, near Queen's Road, and proceeding by the Public Gardens and Gleneally Gully to a point at Victoria Gap below No. 6 Police Station, and terminating at the junction of the Peak and Chamberlain Roads.

In the *Government Gazette* that was published on Saturday morning is a notification that it is the intention of the promoter of the new scheme to apply to the Legislative Council of Hongkong for a bill authorizing the construction of the proposed tramway.

From the draft of the proposed bill, made by Messrs. Johnson, Stokes & Master, solicitors for the promotor (Mr. A. Findlay Smith), we gather that the cars used on the tramway may be moved by means of a stationary engine or by electrical power conveyed by wires to stationary machinery actuated by dynamos and steel wire ropes. The tramway is to be constructed on a gauge of not less than four feet eight inches in width. If the promotor does not, within five years from the commencement of the ordinance, complete and open for public traffic the whole of the tramway, the powers for construction shall cease to be exercised, unless the time be prolonged by the Governor in Council. This suspension is also liable if, within one year from the commencement of the ordinance, the construction of the tramway is not substantially commenced in the opinion of the Governor in Council, or if the construction is suspended, after commencement, without sufficient reason. Postmen and policemen on duty shall be carried free of charge in the cars, and the fares for passengers are not to exceed the following rates for the single journey:—First class, 40 cents; second class, 30 cents; third class, 10 cents. It is stipulated that three places shall be specially reserved in each car for the use of the Governor and his staff. Separate cars or separate accommodation shall be provided for Chinese third class passengers. Fares to be charged for parcels and animals are also published.—*S. C. Morning Post*.

AMERICAN LOCOMOTIVES, JAPAN.—Regarding American versus British locomotives in Japan, the Secretary of the British Legation at Tokio in a report to the British Foreign Office says that the locomotive imports from the United Kingdom are slowly decreasing and that those from the United States are increasing. The American engines, he says, commend themselves to the Japanese railway companies for several reasons. They cost less to buy and can be much more promptly delivered, both of which points are of primary importance to the Japanese companies; the latter especially at the present juncture, when the hauling capacity of the companies is strained to the utmost. The Japanese engine drivers are becoming more accustomed to the American pattern and prefer it, especially as regarding the making of repairs, to the British type. The Baldwin Locomotive Works of Philadelphia have so far this year secured orders for more than 100 locomotives for export to Japan. The largest recent contract given out by Japan went, however, to German builders.—*Ex.*

HANKOW-CANTON RAILWAY.—Recently the Hunanese who have official positions at Peking, upon hearing the report that the concession of the Hankow-Canton railway had passed into the hands of the Belgians, displayed great indignation, but their schemes to meet this matter do not agree, and some of them may be enumerated as follows:

1.—To buy up the bonds issued in the United States.

2.—To collect capital in China to buy back bonds issued in China, and also to buy up all the land on the route.

3.—The bonds shall not be owned by any others but the citizens of the U. S. or Chinese subjects, and they shall not be transferred to

any other persons but the above mentioned two countrymen.

4.—According to the old arrangement China will lose much, and it had better be taken by China alone.

Though all these views do not coincide, yet they agree in wanting the original agreement made null and void.

The Peking Government wired to Sheng Kungpao during the last month to endeavor to make the original agreement null and void, yet Sheng Kungpao asked leave excusing him from the duty, as he is sick. Then the Peking government again ordered Sheng Kungpao to attend to the matter, but Sheng again answered that he is still sick and cannot attend any meeting. The Ex-Governor Wang-Chih-chun is now in Shanghai and has to attend to the matter.—*Universal Gazette*.

CANTON-SAMSHUI RAILWAY.—Canton, September 22.—The last spike on the Samshui division of the Canton-Hankow railway was driven at noon to-day. The spike was of silver, and weighed 13½ ozs., and the following gentlemen present gave it a tap: Messrs. N. M. Holmes, Acting Chief Engineer; Joseph Lind, Supt. of Transportation; H. T. Howe, Division Engineer; Wm. M. Pinkston, Purchasing Agent; H. Van Allen, General Roadmaster; J. A. Rule, Chief Accountant; E. F. Spethman, Secretary to General Manager; S. Westbrook, Property Clerk; A. Morrison, Harbor Master, Samshui; Lt. Commdr. Attay, H.M.S. *Sandpiper*; Surgeon Darley, H.M.S. *Sandpiper*; Lt. Commdr. Desmaker, U.S.S. *Callao*; Lt. Commdr. Sterling, U.S.S. *Callao*; Surgeon Strine, U.S.S. *Helena*; Lt. Smith, U.S.S. *Helena*; Mr. C. A. Cavazzani, Shameen; Mr. G. H. Fuller, and Assistant Roadmaster Deitz, who gave the final stroke.

One can now ride 32 miles over the most picturesque and cosmopolitan line of railway known. There is always a city, town, or village in sight.—*S. C. Morning Post*.

CANTON MACAO RAILWAY.—With reference to the Canton Macao railway, Sheng Kung-Pao has appointed two men, surnamed Lin and Huang respectively, to Canton, for the purpose of obtaining capital from Chinese sources. It is now learned that Lin has succeeded in getting ten men interested in the enterprise at Hongkong, while Huang has been similarly successful in his mission at Canton. These ten men have taken up twenty shares, each share representing Tls. 100,000, so that the total amount subscribed is Tls. 2,000,000. The Portuguese merchants will also raise Tls. 2,000,000, and with a capital of Tls. 4,000,000, the railway company, which is to be both Chinese and Portuguese, will be put in good working order. After the completion of the railway, China can set up a tax department at the railway head station, as the Portuguese Government has consented.—*Alarming Bell, Daily News*.

A PEKING REPORT.—PEKING, Sept. 5th.—Some time ago a Portuguese Envoy to China asked Cheng Hsuan-huai that Portuguese merchants should be allowed to raise the capital, engage the engineers, and do all other matters necessary to the laying down of the Canton-Macao railway. The application, however, was not granted. The Portuguese are now negotiating direct with the Chinese Foreign Office through the Portuguese Minister at Peking.

SHANTUNG RAILWAY.—TAIAN-FU, August 8.—A number of German engineers have just come to locate the railway which is to pass south from Chinanfu toward the Honan border. The general idea seems to be that it will pass this place, Yenchoufu, Chiningchou, and from there in a general southerly direction; though these engineers seem to have no very distinct notion as to the general scheme. They are surveying by sections, this company surveying only to K'ufu about halfway between Taianfu and Yenchoufu. They say that there is little prospect of the road being constructed at the present time, on account of the Russo-Japanese war, the Chinese Government being unwilling to grant the necessary

qualifications for proceeding with the work.—*N. C. Daily News.*

EXTENSION OF THE HOKKAIDO RAILWAY.—The annual appropriation for the construction of the Hokkaido Railway has hitherto been 1,930,000 yen, but this year the amount will, says the *Chugai Shogyo*, probably be reduced to 1,320,000 yen, which sum will mostly be used for the extension of the Tokai line. Under the circumstances, the construction of the Rumoppe line will necessarily be postponed. Work on the section between Ochiai, the present terminus of the railway, and Kushiro, will be completed by September, 1905, and the opening of this section will mean the completion of the entire main line of the railway, which will be 450 miles in length. Work is now being carried on between Ochiai and Shinnai, and is expected to be completed in the course of the current year.

A meeting of the Directors of the Penang Hills Railway Company, Ltd., was held, says the *Penang Gazette*, on Thursday, at which the present position of the Company was discussed and fully commented upon. It was decided that in view of the delay in the construction of the line, a weekly meeting should in future be held, and that the Engineer's weekly reports should be published. Progress has been impeded by the rains, but the station buildings and motor house are approaching completion, and the cars are in a forward state. The Municipality have started laying the tramway communication to the lower station, and the contractor states that, should the weather improve, the line should be completed by 1st November.

MANCHURIA RAILWAY.—M. Lessar, Russian Minister to Peking, recently asked the Waiwupu if China would, in accordance with the agreement regarding the Chinese Eastern Railway in Manchuria, buy the railway from Russia. The Waiwupu answered that China has no funds to buy the same now, and asked to postpone the request for the time being. The Russian Minister, it is believed, has no intention of asking payment at present, and all he wants is that the interest on such price to be paid by China, as Russia cannot keep the railway now and wants to transfer the railway and responsibility to look after the same to China.—*Sin Wan Pao.*

HUNAN-HANKOW RY.—Some of the wealthy of Hunan have obtained permission to construct the Hsiang-Han or Hunan-Hankow railway. The capital will be enlisted among Chinese merchants and officials at Tls. 100 per share at 6 per cent per annum, but it is said that owing to the difficulty of obtaining funds the promoters are consulting the Government as to collecting twelve cash more on every picul of rice produced in the province, giving Tls. 800,000 per annum. The money will be refunded by the company afterwards—to the Government, not to the taxpayers.

RAILWAYS, CHINA.—A British merchant has concluded a secret agreement with a degraded Magistrate of Honan, with regard to railways and mines. The agreement is for the building of the railway from Nanchang, Kiangsi, to Kiukiang, with a subscribed capital of \$10,000,000, and also for the developing of the coal mine at Nanchu. The Magistrate has succeeded in getting a certain Chinese petty official to be the representative of the company, who will shortly go up to Peking on behalf of the organization, in order to report the schemes to the Board of Commerce.

SHAN STATES RAILWAY.—In addition to the railway programme sanctioned for Burma, the Lieutenant-Governor, Sir Hugh Barnes, has now suggested to the Government of India the immediate construction of a Southern Shan States railway. It would be a narrow gauge line from the Mandalay railway to Tannggyi, a distance of 112 miles, costing 68 lakhs (£543,333). The line would open up a fertile region suitable for European planting and mining enterprise. The project is warmly supported by the mercantile community at Rangoon.

THE LUHAN RAILWAY CO.—The Luhan Railway Co. intends to purchase with Tls. 600,000 the Siling railway, which is to be made a special branch for the transport of coal. Deputies of the company have been appointed to negotiate the matter with Sheng Kungpao and Viceroy Yuan Shih-kai. The latter has replied that he cannot decide anything without first submitting a memorial to the Throne.—*Eastern Times.*

THE PEKIN SYNDICATE, says a Honan correspondent of the *P. & T. Times*, has thrown open their line for general traffic, and now carries passengers from Taokon to Tawang in open trucks. The staff at Jamieson works are hemmed in by raging torrents that have filled the gullies on both sides of them. The Luhan railway is now running trains as far south as Ikou, a village half way between Changtefu and Weihuifu.

YUNNAN RAILWAY.—A Yunnan letter says that the French railway from Annam to Mengtse has already been operating and that the railway line has been completed between Mengtse and the city of Yunnan, and two stations from Mengtse have been completed but the other stations are still under construction. The foreign staffs in control of the railway works are very quiet people, but the Chinese employees are roughs and do not treat the passengers and goods properly.—*Universal Gazette.*

THE SHANSI RAILWAY.—Recently, a British merchant petitioned the Wai Wu Pu, requesting that the right to build the Shansi railway, extending from Taiyuenfu to Poochoufu, may be granted him. The Chinese authorities, however, do not seem willing to grant the right to any outsider, but are holding a strong view that the railway should be undertaken with native capital, to be raised by the province itself.—*Eastern Times.*

YUNNAN-KWEICHOW RY.—The Viceroy of Yunnan and Kweichow has telegraphed to the Board of Revenue for funds to the extent of Tls. 400,000 or so to build the Yunnan-Kweichow Railway. The Board of Revenue has ordered the different provincial authorities to devise methods for raising this amount.—*Eastern Times.*

LIGHT RAILWAY, PEKING.—The Light Railway between the West Gate of Peking and Eho

Park Palace, which was destroyed by German troops in 1900, is to be soon restored, the money for the work being furnished by the Empress Dowager's favorite, Li Lien-ying. This personage has the reputation of being one of the wealthiest in the whole Empire.

It is reported by one of the passengers who arrived from Hankow the other day that in consequence of the American China Development Company having passed into Belgian hands, the whole American staff on the North, or Hankow end of the Hankow-Canton railway, has been recalled.—*N. C. D. News.*

SWATOW-CHAOCHOUFU RAILWAY.—The survey of the Swatow-Chaochoufu railway having been completed, work on the line was accordingly started on the 17th inst. The railway station is situated at Shaling, just on the side of the river opposite to Swatow.

The French are engaging twelve thousand coolies in North China to work on the railway to Yunnan. The exodus of coolies now in progress is having a considerable effect on the Tientsin labor market, country hands coming in to replace the skilled men.

A new bank in connection with the Swatow-Chaochoufu railway, opened at the former port and at Hongkong, is known as the Chung Kuo Hu Shang Yin Hang.

The gorges about Ch'ing-yuan are said to be the most serious obstacles on the Canton-Hankow railroad, and will necessitate the construction of a few short tunnels.

HANKOW-HANGCHOW LINE.—According to our Peking correspondent, the Chekiang gentry are applying for permission from the Wai Wu Pu to build the two railways, from Hankow to Hangchow and from Kiukiang to Foochow, respectively. In case of failing to raise the necessary amount of capital, they intend to contract a loan from American capitalists to carry out their object, and are willing to pay a royalty amounting to Tls. 200,000 to the Chinese Government.—*Universal Gazette.*

The construction of the Seoul-Wonsan military railway is to be started at no distant date.

The Seoul-Wiju Railway is expected to be finished towards the end of this year.

IMPERIAL RAILWAYS OF NORTH CHINA

WORKING COSTS

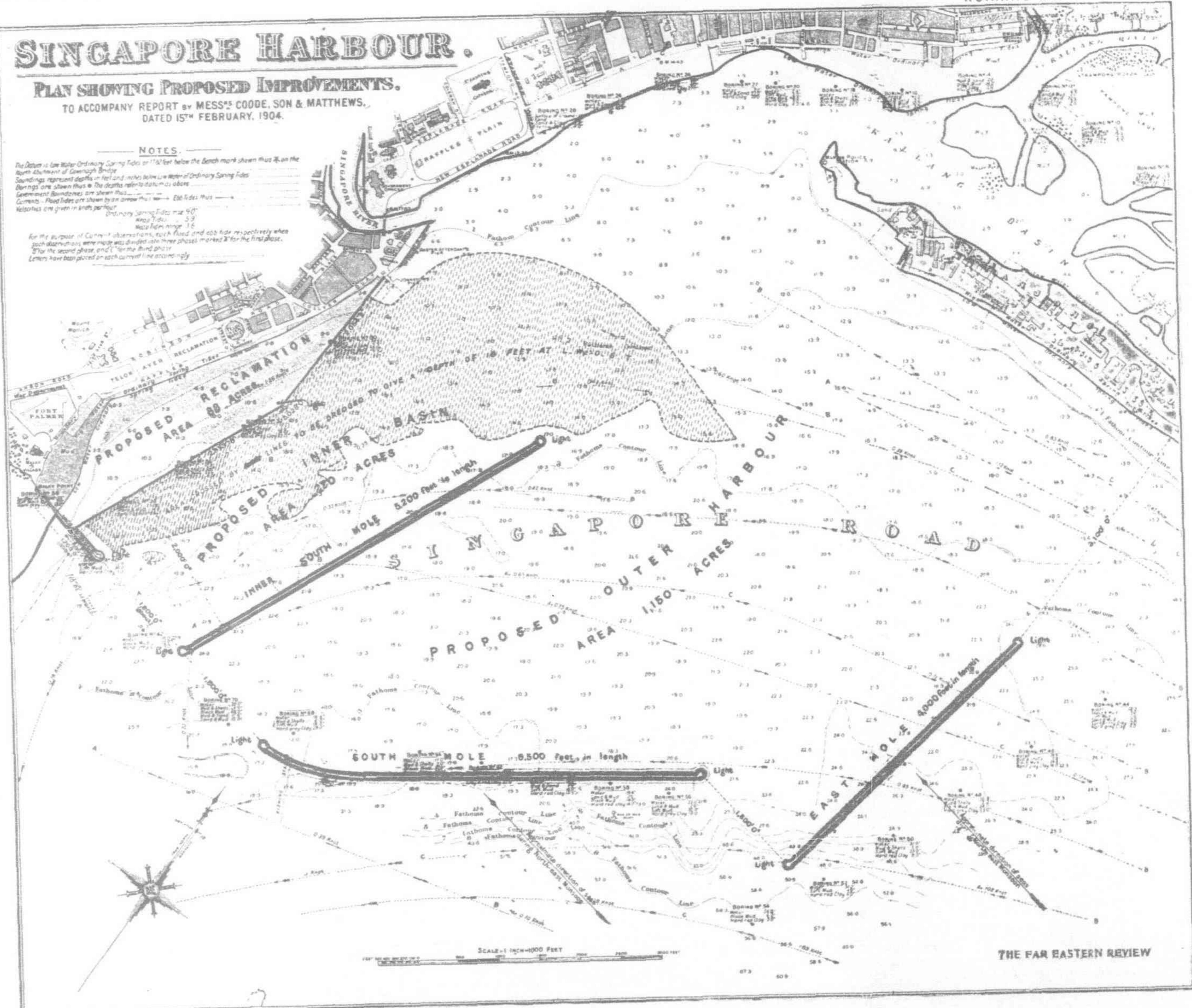
FROM JANUARY, 1904, UNTIL MAY, 1904.

PARTICULARS, CLASS	JANUARY	FEBRUARY	MARCH	APRIL	MAY
Total train miles.....	114,656	88,213	110,186	116,153	140,895
Passenger mileage	9,364,437	6,596,355	12,416,415	10,883,648	11,063,208
Train mileage	10,685,490	6,281,114	11,108,615	13,593,661	16,164,029
Total working expenses (Engineers, Loco., Traffic, and General) excluding Loan interest.....	\$158,303.78	\$190,952.68	\$242,987.39	\$208,234.18	\$235,975.83
Cost of running one pas- senger, per mile, ton, in cents.....	.788	1.482	1.033	.851	.876
Receipts for ditto.....	2,263.00	2,876.00	2,230.00	2,213.00	2,104.00
Profit on ditto.....	1,474.00	1,395.00	1,199.00	1,365.00	1,238.00
Total number of passengers..	127,085	102,889	174,187	168,089	178,394
Total tons of goods carried..	110,008	60,850	120,631	163,238	194,547
Total earnings.....	453,735.22	370,508.61	525,382.25	541,324.76	572,867.84

Peking, September 7, 1904.

October, 1904

THE FAR EASTERN REVIEW



PROPOSED IMPROVEMENTS TO SINGAPORE HARBOUR

Through the courtesy of the *Straits Times*, of Singapore, we are able to present to our readers the plans for the proposed improvements of that port. In our July issue we published a résumé of the scheme, without the plans to give a clear idea of its great scope.

The proposed improvements have been carefully studied out and planned by Messrs. Coode, Son & Matthews, the famous harbor experts of England, aided by the Deputy Colonial Engineer for Singapore, Mr. P. R. Warren, who was specially detailed for this purpose.

The result of their efforts, as embodied in a report to the Crown Agent's Office, recommends the construction of a series of moles protecting an inner harbor, as is shown in the plans. The original estimated cost was about \$12,000,000, but the revised recommendations fail to give any hint as to the probable cost of the improved scheme, the engineers recommending that tenders be invited and the work let out by contract. The inference is that, owing to the variations of the bottom, unforeseen obstacles and other engineering difficulties which might crop up, the cost will probably be greatly in excess of the original estimate.

This question has been apparently fully considered in the original report, where it assumed that the value of the proposed reclamation for disposal as building lots would be almost equivalent to the total cost of the work.

According to this viewpoint, the area to be reclaimed was 3,702,000 square feet; and after deducting adequate road and quay spaces, amounting to 832,000 sq. feet, it would leave a total of 2,870,000 square feet available for building lots.

At an average price of \$4.00 per foot, a sum of \$11,480,000 would be realized from the sale of the plots, as against \$11,878,000, the estimated cost of the three moles, the quay way, and the reclamation. Interest on the first cost, pending the completion of the reclamation and the sale of the plots, would reduce somewhat the value of the land.

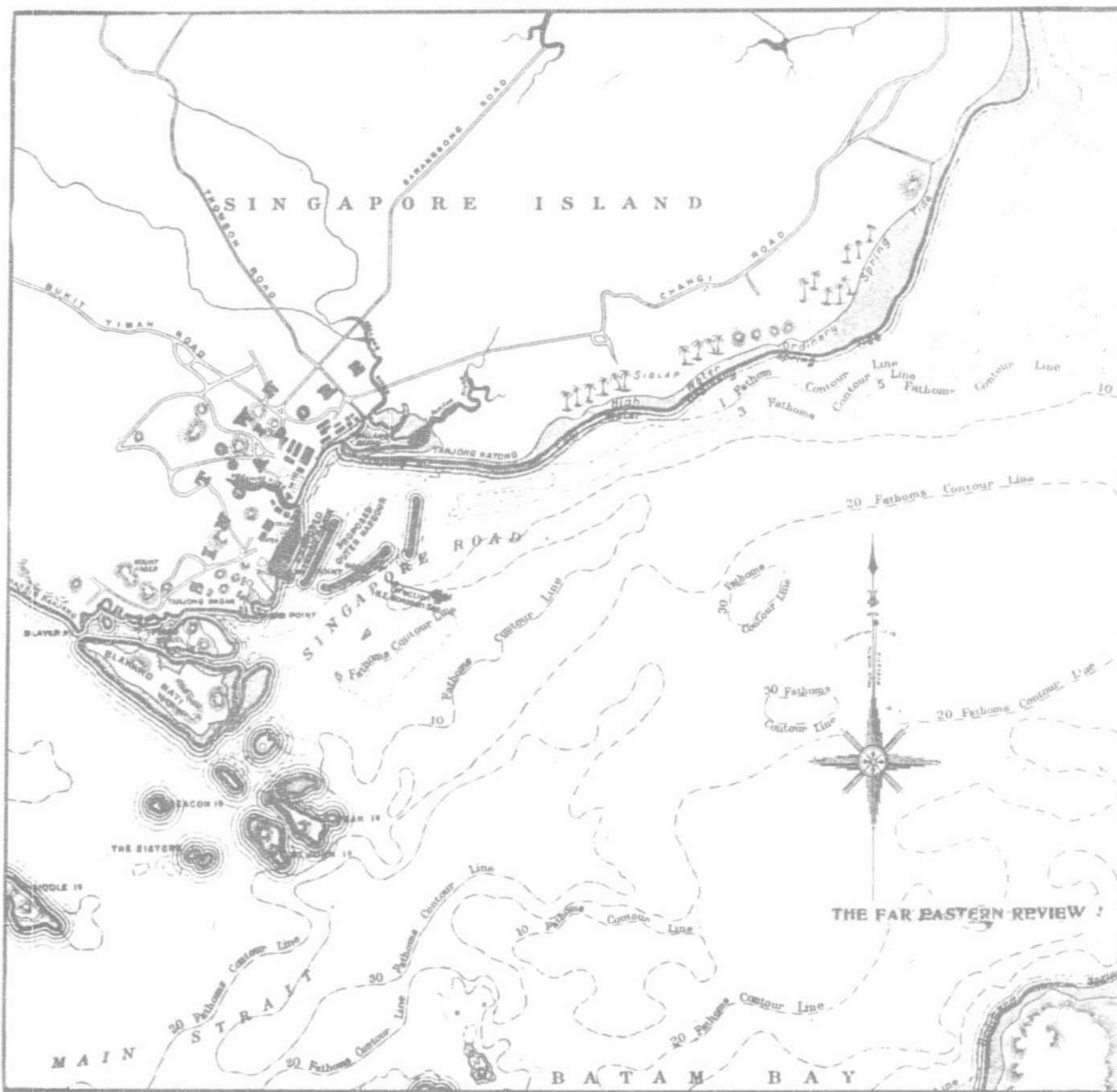
After all the expensive preparatory studies have been completed, the commercial interests in Singapore have decided that they do not need such an elaborate scheme, and that instead of the protected outer and inner harbor, they want a small handy boat harbor to the north of the Singapore River, where lighters can find a

quick and safe refuge in the monsoon season. In fact, the commercial interests have opposed the great expenditure from the very start, fearing that the cost would have to be borne to a large extent by the imposition of excessive tonnage dues, which would react on the prosperity of the port. Despite their protest, the government seems to have persisted in its course, and carried the scheme to its present stage.

The new plans have also received the severest criticism of all interested parties, and the Chamber of Commerce has taken the matter in hand before a special meeting called for that purpose. They base their disapproval on the grounds that the advantages expected to be gained are not commensurate with the enormous cost, which it is feared must lead to the creation of port dues.

The failure of a similar scheme at Colombo, planned by the same engineers, is brought forward as an argument against its adoption in Singapore.

It looks as though the scheme will fall through, and a much smaller work carried out.



GENERAL PLAN OF SINGAPORE STRAIT, SHOWING PROPOSED WORKS.

(From the Report of Messrs. Coode, Son & Matthews. Reprinted from July issue of FAR EASTERN REVIEW.)

The full report of Messrs. Coode, Son & Matthews on the proposed Harbor Improvements of Singapore once more brings to the front one of the most important questions of the day. The original report of 1901 (with that, the present report) was based on the principle of affording shelter to the Inner Roads, chiefly used by intercolonial and small steamers, by the construction of moles, three in number, of a length of about $2\frac{1}{2}$ miles, with two entrances each 1,500 feet wide. The area thus sheltered would comprise 1,300 acres, a vast extent, which is considered to be justified, having regard to the considerable and rapid developments which are taking place in the traffic of the Port. A leading feature of the scheme is the reclamation of 85 acres in front of Telok Ayer, with a Quay which is to have a depth of sixteen feet at low water alongside.

THE MODIFICATIONS.

The scheme in the fuller report is modified in some measure, but not materially altered. The South Mole is to be 5,500 ft. long, and the East Mole 4,000 ft. Both are slightly altered in their direction, the former to allow more space at the southern end of the inner harbor; the latter because of the cheaper cost of construction. The greatest modification is made in the West Mole, which is considerably shortened, and now is to extend very little beyond the inner end of the fishing stakes off Malay Point, to the west of Fort Palmer. An entirely new portion of the scheme is the construction of an inner South Mole, 4,200 feet long, this forming a harbor within a harbor, the inner basin being 270 acres and being dredged to a depth of 16 ft. at low water ordinary spring tides. The necessity for this work is thus expressed:

INNER MOLE NECESSARY.

"We consider that such a work is necessary in order to protect the proposed quay at Telok Ayer from the effect of waves generated *within the harbor* on the occurrence of strong east and northeast winds. In the absence of such

protection there would be reason to fear that lighters and the smaller class of steamers might be sometimes inconvenienced when lying in front or in the vicinity of the quay, especially in view of the fact that the intervening space across the harbor, inside the shelter of the south and east moles, would be from a mile to a mile and a half in breadth. The outer moles would afford protection from the northeast monsoon seas, which, of course, is the quarter from which shelter is most required."

THE WEST MOLE.

A study of the tidal currents has caused the shortening of the West Mole, to promote circulation within the harbor to the fullest possible extent, in order to prevent shoaling as far as possible. This will also be aided by the training effect of the Inner Mole and the Quay Wall beneficially affecting the same from a sanitary point of view as well as minimizing the tendency to deposit silt over the areas in question. It is not expected that steamers will take shelter in the Inner Basin, as they would be adequately protected in the outer harbor.

88 ACRES RECLAIMED.

The reclamation, according to the revised survey, will be 88 acres. For the benefit of those who will not see the plans, we may mention that it extends from Johnston's Pier in a straight line to opposite Telok Ayer Market, from which it is distant about one third of a mile. This triangular piece of the reclamation will, of course, alter the whole appearance of the sea front of Collyer Quay, which will no longer be the sea-front, which will be over a hundred feet in front of the present sea wall. At Princes street it will be three hundred feet from the sea. Finlayson Green will be four hundred feet inland, the Fish Market 800 ft., and the Detective Station a thousand feet from "Swettenham Quay," which is to be a hundred feet wide, deep enough to provide berthing for fifteen to twenty intercolonial steamers, at the same time (we quote from the report), and be covered with merchants' offices and godowns.

EXISTING ARRANGEMENTS UNDISTURBED.

The proposed works are not to be prejudicial

to those of the Tanjong Pagar Dock Co., either by wave propagation westward or by the creation of objectionable deposits. While effectively sheltering the Inner Roads, they will not interfere with the mooring of warships and large steamers in the outer road, nor will any impediment be offered to lighters and tongkangs proceeding from these vessels to the Singapore River. Nor will there be any backwash, owing to the angle at which waves will impinge on the moles.

THE MOLES.

The construction of the moles is, speaking generally, to be of rubble mounds composed of granite from Pulo Obin, the seaward faces of selected rubble of large size. The Inner Mole would be faced with dressed granite.

The head of each mole would consist of an iron caisson of cylindrical shape filled with concrete in mass, a superstructure of concrete and granite, with a light at each head served by oil gas from a special apparatus provided ashore. The Quay Wall at Telok Ayer would consist of concrete cylinders afterwards filled in solid with concrete. Fenders, bollards, and boat steps would be provided, and anchoring buoys.

THE COST.

It may be remembered that the estimate in the 1901 report was \$12,000,000, nearly the whole of which might be expected to be recouped by the sale of Telok Ayer Land reclaimed. No estimates are given in the present report: the engineers recommend that it be carried out by contract as at Colombo, Penang, and Old Calabar. Experienced contractors possessing the necessary capital and plant would have the command of an experienced staff of agents, foremen, and leading workmen. Having regard to the uncertainty which exists as to the quantity of rubble required due to settlement in the soft mud, it is recommended that the contract should be based on a schedule of prices and not on a lump sum. Payments would be made on the actual quantities of work done. Eight years would be required for the full completion of the works.

RAILWAY COMMUNICATION.

Working drawing No. 3 shows a proposed line of railway along the Quay, across the reclamation at the east end of the Tanjong Pagar Dock Co. through the Dock Co's premises, and joining the Singapore Extension at Mount Narcis. An alternative line would run through the Malay village at the foot of Fort Palmer, and cross Anson and Tanjong Pagar road east of the Boustead Institute to Mount Narcis. This would be shorter and wholly colonial, while the other would be jointly constructed by the Government and the Dock Company.

A SUMMARY.

(1) The Inner Road, and those portions of the Harbor which are adjacent to the shore, would be sheltered at all times and under all conditions of wind and weather.

(2) The necessity for the construction of an independent boat harbor would be removed.

(3) The transfer of the traffic, due to the berthing of intercolonial steamers at a sheltered quay, such as that proposed at Telok Ayer, would greatly relieve the crowded condition of the river.

(4) The erection of godowns on the new reclamation, arranged specially to meet the altered conditions of traffic, and in close proximity to the steamers, would considerably facilitate the handling of cargoes.

(5) The proposed Quay would be connected with the railway system of the Island and also with Tanjong Pagar.

(6) Ample accommodation would be provided to meet present requirements, and means afforded for extension hereafter, if desired, either by further deepening the sheltered area by dredging, or by forming additional berthing by jetties or further quayage.

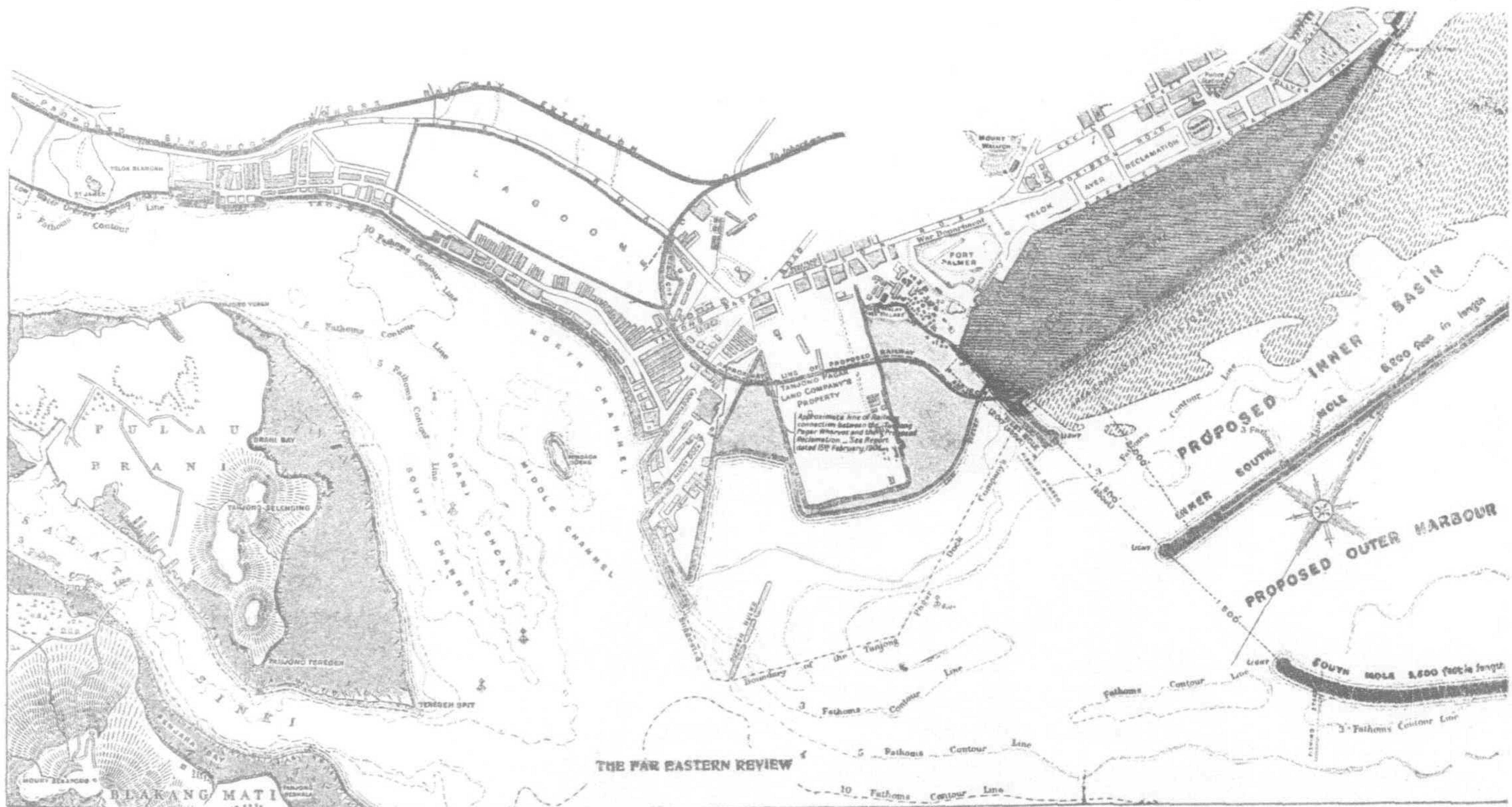
(7) Before improvement works at Kallang Basin, such as described in our former report, could be carried out, similar shelter to that contemplated by the proposed works would be necessary. The Kallang Basin improvements

SINGAPORE HARBOUR

PLAN SHOWING SUGGESTED RAILWAY CONNECTION BETWEEN TANJONG PAGAR WHARVES AND THE PROPOSED TELOK AYER RECLAMATION,

NOTES.—This plan has been compiled from the Survey made by Mr. P. R. Warren in 1902 for the portion North East of the Tanjong Pagar Dock Company's Graving Docks; Westward thereof the Plan has been compiled from various sources and the accuracy should be regarded as approximate only.

Contour lines show depths in fathoms below Low Water Ordinary Spring Tides.



could therefore be undertaken hereafter, without further cost on sheltering works, when it is considered that the time has arrived for the execution of the same.

SOME OTHER POINTS.

Disadvantage would result, in the opinion of the engineers, from a partial execution of the works. If the Inner Mole only were proceeded with, steamers and craft in the Roads would be interfered with by backwash; there would certainly be an inadequacy of sheltered area for the accommodation of the present traffic, and a want of protection to the mouth of the Singapore River. Likewise the cost of the Inner South Mole would be increased, as it would be exposed to the full sea stroke.

As to the extent of the dredging, that would not be such as to constitute a serious objection to the carrying out of the contemplated works. The lines of the structures are in accord with the currents; the debris delivered into the harbor from drainage is estimated at 28,000 cubic yards, 60 per cent of the quantity of metalling spread over the roads. It is not considered that the dredging would be exceptionally heavy, under the circumstances.

YUEN SHENG EXCHANGE AND TRADING CO., MANILA.—Chinese capitalists have demonstrated their confidence in the future of the Philippine Islands by establishing a branch of a large banking and trading corporation, with a capital of two million dollars, Philippine currency, in Manila.

The Hongkong and Manila Yuen Sheng Exchange and Trading Co. (Ltd.) was incorporated in Hongkong, September 5, under the "Companies Ordinance" of the colony of Victoria, 1865, with a capital stock of two million pesos, divided into shares of one hundred pesos

each. The object of the company is to lend and advance money with or without security, and to negotiate loans and to act as agents for the loan and payment, transmission and investing and collection of money, and for the management and realization of property, and generally transact all accounts and agency business.

To deal in all negotiable instruments and securities and to receive money and valuables on deposit. The company will also handle marine and fire insurance in all forms and conduct a general commission and brokerage business in all branches of trade. Ug Li Hing, a prominent merchant of Hongkong, has been appointed general manager, and is in charge of the head office at Hongkong.

The Manila office is located at 64 Anloague and was opened for business, September 26.

The Manila directorate is comprised of the leading Chinese business men of the city. They are: Lim Eng Tong, Uy Soo Bin, Yeo Chum Sin, Pua Jam Joo, Uy Chek Plow, Goh Geok Soo, Yeo Chin Seng, Cheyn Yee Baw, Uy Chiam Liang, Choa Eng Seng, Loo Koon Yew.

The general manager for Manila is Mr. Yu Kah Cheon, alias You Biow Sontua, a well-known banker and capitalist. Mr. Choa Tek Hee is his first assistant. Manager Choa Tek Hee has had a wide experience in the banking business throughout the East, and is a business man of sterling qualities and unquestioned integrity. With these two gentlemen in charge of the institution, its success in the islands is assured.

ROSENSTOCK'S MANILA CITY DIRECTORY.—We are in receipt of a copy of the latest edition of this publication, for the quarter ending December, 1904. It is a great advance

over previous efforts, and its contents are compiled and tabulated in a handy, gettable shape, so that little time is lost in seeking desired information. The book is bound in good board covers.

It is a welcome addition to the commercial needs of the city and island, and, to firms in the homeland seeking trade in this direction, it is invaluable. Its classified lists of trades and professions cannot but be of interest and assistance to the latter. It also contains a street directory and the names of the civil and military officials throughout the Islands.

It is to be published every three months, and kept up to date. The subscription price is \$5.00 gold per year.

NEW PHILIPPINE BANK

Vicente Luchan, Florentino Torres, Modesto Reyes, Cruz Herrera, and other prominent Filipinos, met on October 10th, to discuss the formation of a Filipino bank, which should be established with Filipino capital.

The meeting was held in the Liceo de Manila, under the presidency of Florentino Torres. Felipe Buencamino expounded to the gathering the object of the meeting, explaining to them the great necessity for such an institution. The project of the bank was to commence business with a capital of \$200,000, and, as the interests of the bank demanded it and the condition of the country warranted it, increase the capital to the sum of \$5,000,000.

A board of directors was chosen, the persons elected being: Thomas E. Evans, Modesto Reyes (City attorney), Cruz Herrera (President of the municipal board), Pedro Paterno, and Felipe Buencamino.

The board of directors of the new bank will have its offices for the present in the building No. 39 Plaza Cervantes, Binondo.

M. J. CONNELL.—One of the signs of the times, indicating the upward tendency of business and the confidence of Americans in the future of the Islands, is marked by the opening of a branch office in Manila of the large commercial house of M. J. Connell, of Seattle. This firm has already secured a firm foothold in the Orient, having established branches in Hongkong and Shanghai, where a stock of their principal products are carried for the immediate wants of the trade.

The firm will be represented here by Mr. Hugo von Schuster, who was formerly an officer in the Constabulary, from which he was forced to resign by reason of bad health.

The leading agencies held by the firm for the Far East are Borden's Condensed Milk Co.; St. Charles Condensing Co.; California Trust Canners Ass'n; Armour & Co.; Royal Baking Powder Co.; Sprague Roller Mill; Ritzville Milling Co.; Harrington Milling Co.; Paha Milling Co.; Connell Milling Co.; Lind Milling Co., and Rainier Beer.

WM. H. ANDERSON & Co., MANILA.—This enterprising and energetic American firm has removed from the McCullough to the Orpheum Building, where they have a large office and sample room for the many high-class goods for which they are agents.

The success of this firm since its start a few months ago is an example of what can be accomplished by hard work and application of American hustle to securing business in a field with the world's products in competition. The goods handled are standard in their lines. The firm is the Philippine agents for the Green Island Cement Co. of Hongkong, Studebaker Bros. Mfg. Co.; Libby, McNeil & Libby; Swift & Co.; Brunswick-Balke Collender Co.; Diebold Safes; Aermotors; Deere Implement Co.; Hilbert Bros, etc., etc.

INTERNATIONAL BANKING CORPORATION, MANILA.—The local branch of this financial institution have secured a fine location on Plaza Moraga for their bank, and are having the premises completely overhauled and refurnished with up-to-date fixtures. The public banking offices are on the ground floor, and the offices of the manager are located above. Mr. G. W. Cooke has the contract for remodelling the building.

BRYAN, LANDON Co., MANILA.—This firm has been so successful, and their business has increased to such proportions, that they have been forced to seek more commodious quarters. They have secured a lease on the property adjoining Squires, Bingham & Co., by the Santa Cruz bridge, which they have rebuilt to suit their requirements. The Bryan, Landon Co. are agents of the Bullock Electric Co., and carry a full line of electrical equipment.

GERMANN & Co., MANILA.—This firm has also been compelled to seek larger quarters for their extensive engineering and electrical business, and have removed this branch from the old address on San Jacinto street to a more advantageous site on the Escolta.

HOWARTH ERSKINE, LTD., SINGAPORE.—The representative of the FAR EASTERN REVIEW, writing from Singapore, states that the business of this firm has made remarkable strides recently, and that their works are running in full blast to keep pace with orders received. The branches of the firm at Kuala Lumpur and Ipoh, in the Malay States, Penang, Bangkok, and Deli in Sumatra, are all receiving a large share of the engineering business of their respective districts. Only recently the firm was the successful bidder for the materials and rolling stock for the Siamese States Railways, against some thirty other competitors. Earlier in the year they also secured the contract for 21 steel road bridges to be used in the construction of the electric street railway system in Bangkok. As noted elsewhere in this issue, they have on hand two interesting electric lighting contracts in the Federated Malay States.

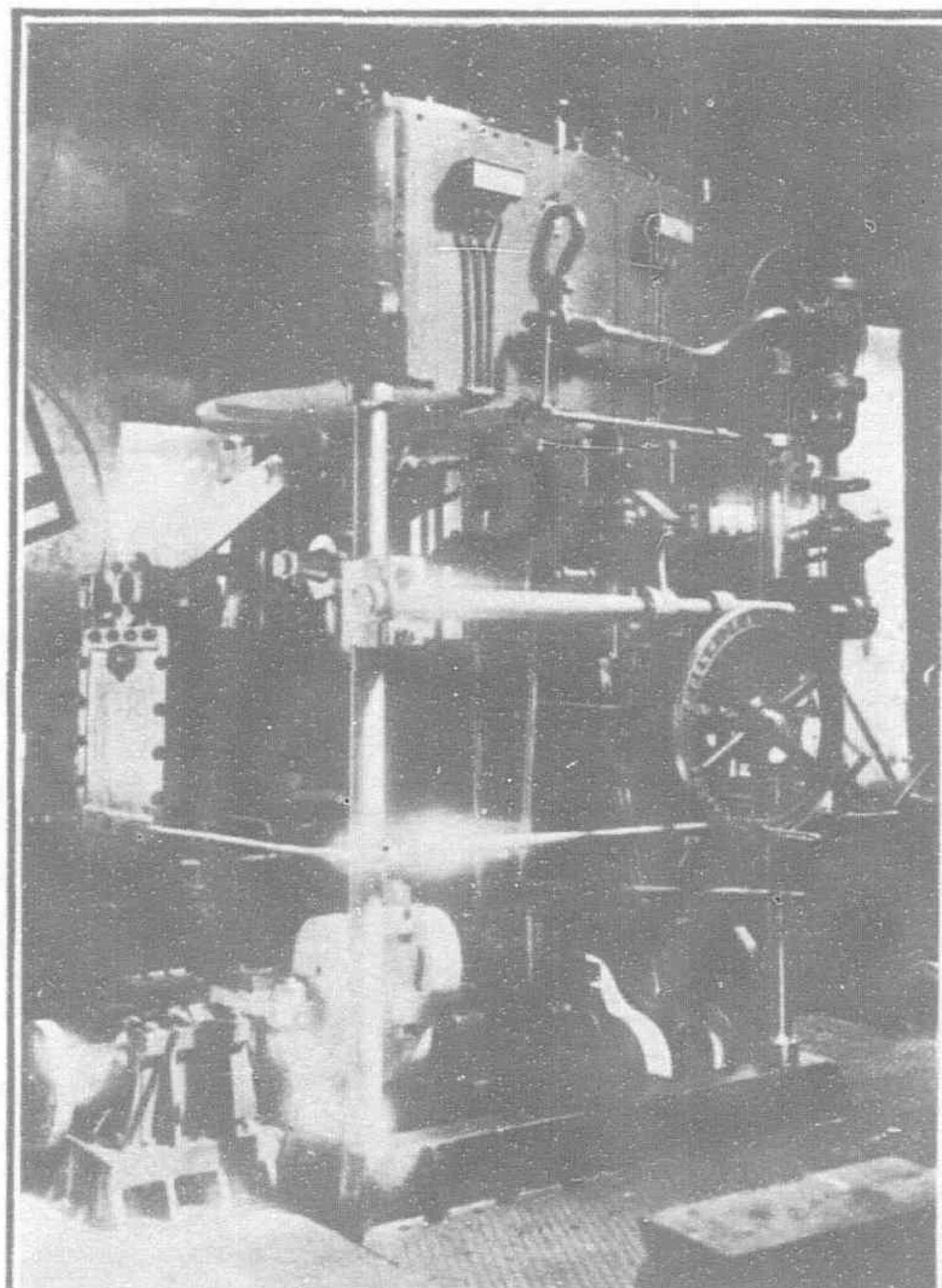
MARINE ENGINES

We reproduce a photograph of a set of Compound Surface Condensing Engines, which, together with the boilers and pumps, have been constructed by Messrs. Geo. Fenwick & Co., Ltd., Hongkong, for the S. S. "—" of this port.

The cylinders are 15" by 31" diameter, with a piston stroke of 21". The steam distribution valves of the H. P. cylinder is of the piston type, that of the L. P. cylinder is flat; both are actuated by double eccentrics and the ordinary link motion, and are made with adjustable cut-offs.

The crank shaft is built, giving thus a wide margin of safety against fracture; the line shafting has couplings forged out of the solid; the propeller is of gun metal.

A "Scotch" boiler, 10 ft. diameter by 9½ ft. long, supplies steam for the engines. It is fitted with all the appurtenances required by the U. S. laws. The two furnaces are connected to a single combustion chamber. The boiler has been built under Lloyds Rules and Survey, and carries a working pressure of 125 lbs.



MARINE ENGINES BUILT BY GEO. FENWICK & CO., FOR MANILA.

LA ELECTRICISTA.—A notice has been issued by the board of directors of La Electricista for a meeting to be held November 12th, at the office of the Tabacaleria. The purpose of the meeting is the discussion of the following questions:

Of the sale and liquidation of the Company effected by virtue of powers conceded by liquidators at the extraordinary general meeting held December 6th, 1902; of the balance and other questions pending at law.

GEO. H. TAY & Co.—This important supply house of San Francisco has again branched out to increase their sphere of commercial activity. As one of the largest dealers in plumbing and engineering supplies it is well known on the Pacific Coast, where, in addition to its headquarters at 49 53 First St., San Francisco, it has important branches at Los Angeles and Seattle.

Mr. Chas. W. McDonald will manage the new branch in Manila, and is at present looking for a suitable site to establish headquarters. A large stock of supplies is en route from the home office, and the new branch will be opened for business as soon as possible. We wish the firm every success.

FARNHAM, BOYD & CO., LTD.

The meeting of this company held in Shanghai, on the 26th, ulto, which was called to act on the proposal received from London to take over the business, resulted in a vote favoring the scheme. It is proposed to make the capital of the new Company £1,200,000, and any further money required for the extension of the works would be raised by bonds in London at 5½ per cent per annum.

After the sale to the new Corporation, it was proposed to form a subsidiary company to take over the Old Dock and a portion of the land between the Cosmopolitan and International Docks, for wharf and godown accommodation. The conditions of the purchase were that the management in Shanghai remained as hitherto. There were two other points. The first was that after increasing the capital they were still within range of dividends from the present earning power. By extending the business they were in a position to increase the earning power, and if the wharf scheme were carried out it seemed the shareholders would be in a very good financial position.

AMERICAN BANK, MANILA.—This institution has considerably increased its quarters on Plaza Cervantes, and completely remodeled the interior of the bank.

The work was let under contract to Mr. A. G. Gies, the prominent engineer builder of Manila, who has made a most artistic finish to a very old structure.

B. W. CADWALLADER & Co.—The old firm of Cadwallader & Co. of Manila, operating a large wood-working and saw mill, in connection with a general lumber business, was recently incorporated in Portland, Oregon, under the title of the B. W. Cadwallader Co. The capital stock of the new company is \$100,000. The papers of incorporation were filed by Messrs. Brady & Wheeler, the president and manager of the Pacific Export Lumber Co. The president of the new firm is Mr. B. W. Cadwallader, who will manage the interests of the company in Manila. The head officers are to be in Portland.

A general lumber business and the manufacture of doors, trim, furniture, etc., will be carried on as formerly.

MARSHALL, SONS & Co., LTD., GAINSBOROUGH, ENGLAND.—We have received through Messrs. Fred. Wilson & Co., agents of this Company, their catalogue of steam engines, boilers, and other machinery. It contains 160 pages, and is fully illustrated with all the different engineering products of the factory. Complete price lists, with export shipping weights, are given. The firm has been established since 1849. Their Britannia and Trent Iron works combined cover upwards of 28 acres, and employment is given to over 3,600 people. The firm has made and supplied over 80,000 steam engines and boilers, which is probably the highest record of any one similar establishment in the world.

Industrial machinery of all kinds are the specialty of these works.

A separate catalogue of agricultural machinery is published and can be secured on application.

A complete line of stationary engines up to 1000 H. P. is manufactured. The larger sizes are fitted with Marshall's Patent Trip Gear, which was awarded the Gold Medal at the Paris Exhibition of 1900.

Winding and hauling engines for mining operations, traction engines, steam road rollers, grinding and saw mill machinery, gold dredging machinery, boilers, portable engines and boilers, are fully illustrated and described in their well got-up catalogue. Messrs. Fred. Wilson & Co. are the agents for the Philippines, and Jardine, Matheson & Co. look after the company's interests in China.

CONSTRUCTION AND ENGINEERING NEWS

OBITUARY

From Penang comes the news of the death of Mr. F. S. B. Gaffney, Deputy Colonial Engineer. The Straits and Penang papers unite in their eulogies of the deceased official, who was considered as a loyal, devoted, and public spirited member of the Government. Mr. Gaffney's last services were in connection with the proposed improvements to the Penang water supply. By his death the engineering community loses an ornament to the profession.

We regret to chronicle the death of Mr. Lawrence Mallory, the well-known timber merchant of Hongkong. Mr. Mallory was an American, but had resided for the last forty-two years in Hongkong. He came out to the East as a lieutenant in the U. S. Navy, in the days of the old wooden frigates, with auxiliary steam power. Resigning his commission, Mr. Mallory embarked in the timber business and was very successful. His specialty was Oregon pine. In his will Mr. Mallory expressed a desire that he be buried with Masonic rites, and for the first time in Hongkong for twenty years this honor was accorded. Sir Paul Chater officiated at the ceremony in the Happy Valley burying grounds, which was attended by all the brother Masons in full regalia.

PERSONAL

Gustav Oberg, the general manager and secretary of the Shanghai Mutual Telephone Company, Limited, of Shanghai, China, is now on his way back to the Far East after a trip to the United States and Europe, where he secured data regarding equipment, and will, it is understood, recommend the placing of some good-sized contracts for apparatus to be used in the Shanghai system, which is to be doubled in capacity.

H. A. Belden, general manager of J. G. White & Co., in charge of the electric traction and lighting system now being hastened to completion in Manila, Philippine Islands, is at present in New York. He is a guest at the Hotel Manhattan. From recent letters received from the United States, Mr. Belden will return shortly to Manila, a Benedict.

Mr. W. E. Roberts, for some years General Manager of the N. B. Trading Co., at Sandakan, has been appointed Manager of the Millars Karri and Jarrah Co., Jesselton, and left London for Borneo on 6th September. It is understood that Mr. Roberts will also act as General Manager of the North Borneo Trading Co., for Mr. Altman, when the latter goes on leave.

Judgment was given on the 19th instant for the plaintiff, W. P. Boyd, against the defendant, the American China Development Co., in the sum of \$13,519 gold currency of the United States of America. The judgment, which was on account of wrongful dismissal of the plaintiff, also carried the costs of the action. The Company is appealing against the decision of the American Consular Court.

Mr. C. W. Anderson, Resident Engineer of the Penang Pier, is temporarily acting as Deputy Colonial Engineer, vice Mr. Gaffney deceased. The Senior Superintendent of Works, Mr. May, is now at Singapore, and it is thought he may be appointed D. C. E.

The Peking Syndicate has amalgamated the branch at Peking with the branch at Shanghai, owing to the dullness of trade.

Messrs. Shewan, Tomes & Co., Hongkong, will move into their new building, St. George's Building, shortly. They will occupy the first and second floors, and two large rooms, facing the sea, on the ground floor. Messrs. Blackhead & Co. will occupy the east part of the ground floor; and Messrs. Gibb, Livingston & Co. the top floor.

The J. A. Fay & Egan Company of Cincinnati, O., has made arrangements with John Chambers & Son, Limited, of Auckland, New Zealand, for the representation of its interest in New Zealand.

Mr. J. S. M. Rennie has severed his connection with the gold mining companies and has joined Tanjong Pagar Dock as Assistant Secretary.

Mr. C. H. Rew has been added to the list of Authorized Architects in Hongkong.

ELECTRIC POWER & TRACTION

ELECTRIC TRACTION AT CAWNPORE.—LUCKNOW, Aug 27.—An order is published in the *United Province Gazette*, authorizing Messrs. Begg, Sutherland & Company, of Cawnpore, to construct an electric tramway from the East Indian Railway station to the Grand Trunk Road at its junction with Harriganj. The line is to be commenced on or before 30th November, this year, and completed and opened for traffic within two years from date of commencement. The system adopted is that of overhead trolley wires. The maximum speed is not to exceed eight miles per hour in frequented thoroughfares and fourteen miles per hour in unfrequented thoroughfares. The tramway is to be both double and single, the line to carry goods and passengers. A limited liability company is to be formed, having accredited agents at Cawnpore for working the tramway; such Company to have powers to include amongst its objects the construction and working of the electric tramways and the supply of electrical energy to other towns in India.

TRAMWAYS, MELBOURNE, AUST.—Australian advices state that the proposals to construct an electric traction system in Essendon and Flemington, suburbs of Melbourne, have at last received the sanction of the Victoria Government authorities. The scheme is fostered by A. E. Morgan, at one time Premier of Western Australia. The municipal authorities of the districts concerned will obtain an order in council for the construction of the tramways, thereafter transferring their powers to Mr. Morgan, who undertakes to commence the erection of the power station within three months, to start the remaining works within nine months, and to have the lines in operation within twenty-one months from date of the transfer, which is expected to be made without delay. The Australasian electrical engineering and contracting firm of Noyes Bros., which represents the Westinghouse and Brill interests, is after the contract for the construction and equipment of the lines, which, it is estimated, will represent an initial expenditure of some \$500,000.—*N. Y. Ex.*

SHANGHAI ELECTRIC TRAMWAYS.—Only three proposals were received in answer to the advertisement calling for tenders, and opened the last day of July ulto. The Municipal Council has decided that they are such as can not be accepted with advantage to the public. It has been definitely decided to readvertise the concession, fixing March 31, 1905, as the date for the receipt of tenders.

TRAMWAY EXTENSION, BANGKOK.—A proposal is on foot at Bangkok to extend the Bangkok City tramway $3\frac{1}{4}$ miles for Tcs. 250,000; to construct an electric tramway on the west side of the river, $6\frac{1}{4}$ miles in length, for Tcs. 450,000; to construct a steam tramway from the company's terminus at Samsen to Pakret, a distance of $12\frac{1}{2}$ miles, for Tcs. 500,000. The estimated cost of the 22 miles of extension is thus Ticals 1,200,000. The directors of the Siamese Tramway Company propose to raise the additional capital by the issue of 1,200 ordinary shares of Tcs. 100 each, yielding Tcs. 120,000; 4,800 share warrants of Tcs. 100

each (yielding a total of Tcs. 480,000), carrying 8 per cent interest, but not participating in any of the profits of the company; and 6,000 of 8 per cent debentures redeemable within 12 years, yielding Tcs. 600,000.

ELECTRIC TRACTION AND POWER, DUNEDIN, N. Z.—The Waipari Electric Power Company, will build a large water power plant on the Waipari River, located in the vicinity of Dunedin, for the purpose of generating energy for transmission to that city, where the current will be used to operate the American electrically equipped traction system. It has placed orders in New York City for its initial installation, to have a capacity of 3,000 horse-power. The General Electric Company will build the generators, while the turbines will be shipped by the Pelton Water Wheel Company.—*N. Y. Ex.*

MANILA ELECTRIC STREET RAILWAY ORDERS.—Latest advices from New York state that further orders were placed last month for equipment by the Manila Electric Railway & Light Co. for the traction system under construction by J. G. White & Co. The orders call for power-house equipment principally. The Goubert Manufacturing Company has been allotted the order for feedwater heaters. The Atha Tool Company has secured a fair-sized order for different kinds of tools, and the Rand Drill Company will ship two large air compressors.

POWER TRANSMISSION, NEW ZEALAND.—NEW YORK, Aug. 28.—A substantial contract has been obtained by the General Electric Co. from the Waipori Electric Company, which concern is constructing a plant at Waipori Falls, located about 25 miles from Dunedin, New Zealand. This plant, it is intended, will generate energy for transmission to Dunedin, to operate the electric traction system and to light that city ultimately. There will be two Pelton water wheels of nearly 2,000 horse-power capacity each. These machines will be direct connected to dynamos of 1,000 kilowatts capacity each, to be built by the General Electric Company.

ELECTRIC TRAMWAY, HONGKONG.—The *Government Gazette* publishes a bill for authorizing another hill tramway to be applied for shortly by Messrs. Johnson, Stokes & Master for the promoter. The tramway authorized by this ordinance is as follows:—"A double line track about one mile in length commencing at the lower end of Battery Path near Queen's Road and proceeding by the Public Gardens and Glenealy Gully to a point at Victoria Gap below No. 6 Police Station, and terminating at the junction of Peak and Chamberlain Roads." It must be in operation within five years of the passing of the bill. Clause 43 reads: "Three places shall be specially reserved by promoter in each car for the use of the Governor and Staff."

THE TOKIO ELECTRIC LIGHT COMPANY.—Tokio, Japan, which concern operates the most extensive electric lighting plant in the Far East, has placed a contract for two 1,000-kilowatt Westinghouse turbines for installation in its power station. The contract was secured through the Japanese house of Takata & Company, which firm represents the Westinghouse interests in the Mikado's Empire.

J. G. WHITE & CO., LTD.—of London, which is the British connection of the American engineering and contracting firm of J. G. White & Co., have opened offices in Buenos Ayres, Argentine Republic, in order to facilitate the securing of some of the many important contracts pending in that part of the world. So far the cream of the business has been in the hands of European, particularly German, manufacturers. M. Baggs, of the London office, will have charge in Buenos Ayres.

J. G. WHITE & CO.—Mr. J. W. McCrosky, at one time one of the engineering experts attached to Theodore N. Vail's South American electric traction interests, who afterwards joined the engineering staff of J. G. White & Co., Ltd., of London, is en route for South America, on a special mission on behalf of the interests of J. G. White & Co., Inc., 43 to 49 Exchange place.

TOKIO AND YOKOHAMA ELECTRIC RAILWAY CO.—An extraordinary general meeting of the shareholders of the Kei hin (Tokio and Yokohama) Electric Railway Company was held on the 15th of August, when it was announced that payment of the first call of *yen* 12.50 per share of the new issue had been made. The proposal for raising a loan of one million *yen* was discussed and finally passed.

CARS, MANILA STREET RAILWAY.—NEW YORK, August 28.—A contract is about to be awarded in this market for several cars, to be used on the Manila electric traction system. Recently, a contract for fifty-five cars was let to a Belgian concern—Compagnie Metallurgique, of Brussels. They are to be built of teak wood, in order to withstand the ravages of the white ants. The cars to be ordered here now will have frames built of steel and teak.

SINGAPORE TRAMWAYS.—The construction of the Electric Tramway is being pushed on rapidly. The posts from Keppel Harbor, up to within a short distance of Tanjong Pagar Road, are complete with wire connections. The work at the Power Station is rapidly progressing, and it is expected that there will be some practical outcome of this work at no distant period.

TOWER WAGONS, MANILA.—The J. A. McCardell Co., of Trenton, N. J., has been sent an order by J. G. White & Co., 49 Exchange Court, the electrical engineering and contracting concern which is building the Manila electric traction system, for tower wagons for overhead construction and repair work.—*N. Y. Ex.*

WAIPORI FALLS POWER CONTRACT.—The tender of the Dunedin, New Zealand, Engineering Company has been accepted for the pipe line to be laid for the purpose of conducting water from Waipori Falls to the power house, in which it is proposed to generate energy for transmission to Dunedin and surrounding district.

ELECTRIC LIGHT AND TRACTION, YINGKOW.—The *Tokio Asahi's* Peking correspondent learns that the Japanese military administration office at Yingkow intends to repair the roads, to install the electric light, to distil the water, and also to construct an electric railway between Yingkow and Niukiatung. The construction of these works will be given to foreigners.

CARS, MANILA STREET RAILWAY.—Several double-truck, open, twelve-bench cars have been ordered, through J. G. White & Co., for the Manila electric traction system. The cars will have bodies made of oak wood and steel, in order to withstand the ravages of the white ants so prevalent in the Philippines.

ELECTRIC LIGHTING

TELEPHONE EXCHANGE, PROVINCE WELLESLEY, S. S.—The Governor has sanctioned the installation of a Telephone Exchange in Province Wellesley, which is undertaken on the individual agreement of the subscribers to pay for the connection for five years. The subscribers are now being called on to sign their agreements, and the installation will at once be proceeded with. The exchange will be open from 6.30 a.m. to 8 p.m., and will be connected with the central exchange in Penang. At present there are some thirteen subscribers who undertake to pay the Government the sum of \$2,820.00 yearly for five years.

ELECTRIC LIGHT, CHINKIANG.—A native syndicate, said to include several very wealthy officials, has now almost completed the building of an electric light station, and the necessary plant is soon to be installed. The capital of the undertaking is said to be Tls. 300,000, Chinkiang currency, and the plant is expected to arrive any day; so that we may expect to see the Chinese suburbs lighted by electricity ere long, and the same illuminant available for the lighting of offices and residences. The company have applied to the Council here for a franchise to light the Concession, which, of course, is also a very hopeful sign of the times.

ELECTRIC LIGHTING NINGPO, CHINA.—From Ningpo news comes that permission has been obtained from the Taotai at that place for the installation of a large electric lighting plant which will supply 4,000 lights. A company has been floated and half the capital of 100,000 taels is represented by the International Commercial Co. and the other half by Chinese. The building is already in course of erection, and the machinery, which is of the latest pattern, and furnished by the New York Import and Export Company, is on the way out. The whole work, it is expected, will be completed in about four months.

ELECTRIC LIGHTING, F. M. S.—His Highness the Sultan of Perak has placed the contract for the electric lighting of his new palaces at Bukit Chandon, Kuala Kangsa, in the hands of Messrs. Howarth, Erskine, Ltd. The work is extensive and includes the provision and equipment of the necessary power station.—*Pinang Gazette*.

ELECTRIC LIGHTING, F. M. S.—Mr. Chung Thye Phin has placed the lighting of his fine new residence at Kelawie, now in course of erection, in the capable hands of the Electrical Department of Messrs. Howarth, Erskine, Ltd., and we hear that the fittings he has selected are much finer than anything in this line we have hitherto seen here.

ELECTRIC LIGHT, BOMBAY.—The London branch of the engineering and contracting firm of J. G. White & Co., of New York, have secured a \$200,000 contract to furnish equipment, etc., for the electric lighting of Bombay, India.

DRY BATTERIES, JAPAN.—William Roche, of 42 Vesey street, New York, has recently secured a substantial Japanese contract for navy standard dry batteries, for use, presumably, on warships.

BENGAL TELEPHONE CO., CALCUTTA.—The Bengal Telephone Co. have made a proposal to the Calcutta Municipal Board to renew their agreement for a period of not less than twenty years.

SANITATION AND DRAINAGE OF RANGOON.—Mr. G. C. Buchanan, Chairman, Port Commissioners, has prepared a note offering useful suggestions to the Municipal Committee on the drainage of Rangoon, which is becoming a matter of serious notice. Mr. Buchanan suggests that Mr. Foy, who has multifarious duties as Municipal Engineer, should revert entirely to Government service as Executive Engineer to town lands reclamation works, and a Municipal Engineer, who is an expert in sewage and water works, be appointed; or that the Municipality create a separate department, to be called the Sewage and Waterworks Department, and appoint a competent expert engineer in charge, who will be entirely independent of the Municipal Engineer and responsible to the Municipal Committee for the efficiency of his department. With regard to the present collapse of the sewage system, he is most emphatically of opinion that expert advice should at once be obtained. The collapse of the sewage

system, he explains, comes from the giving way of the pipes, which have not been renewed since 1887, when the Shone & Ault system was introduced in Rangoon at a cost of twenty-three lakhs.

Mr. Ault, of Messrs. Shone & Ault, England, has accepted the offer of the Rangoon Municipality to look into the defects in the drainage system, and asked for a fee of £600 for four weeks, and ten guineas a day for any time beyond that period during which he remains in Rangoon. The Municipality has agreed to those terms, and Mr. Ault leaves this month.

RANGOON WATER SUPPLY.—The *Rangoon Times* says: The call on the Rangoon Municipality to pay up another six lakhs of rupees to complete the Hlawga water scheme is about the most discreditable thing we have ever heard of in connection with engineering estimates. The explanation given as to how the estimate came to be so far exceeded can not by any means be said to be either explicit or satisfactory; and the community of Rangoon, who have to meet the bill, will certainly not be content until more precise information is forthcoming.

THE MYSORE CITY IMPROVEMENT TRUST BOARD, having resolved to provide the city with a system of pipes for drainage purposes, has considered two estimates, one for Rs. 64,972 from Messrs. Doulton and Co., London, and the other for Rs. 50,934 from Messrs. Burn and Co., Calcutta. The Board, considering the probable superiority of Messrs. Doulton & Co.'s pipes and the possibility of more favorable rates than those quoted being secured by Messrs. Arbuthnot & Co., the Agents; but above all considering the paramount importance of getting the whole supply of pipes without delay, has applied to Government for sanction to place the order with Messrs. Arbuthnot & Co. immediately the necessary funds are provided from the Board's balance.

TOKIO IMPROVEMENTS.—At a recent sitting of the Tokio Streets Improvement Commission, the proposal for the filling in of the inner moat met with strong opposition, and was barely passed with sweeping amendments which totally dismiss the original plan. The proposal provides for the removal of the Wadakura and Babasaki gates and the construction of wide roads connecting the two entrances with Nijubashi.

PORT WORKS, DREDGING ETC.

MACHINERY SUPPLIES FOR ILOILO AND CEBU HARBOR IMPROVEMENTS.—NEW YORK, August 24.—J. G. White & Co. have just let some large orders for equipment, etc., to be used in the construction of harbors at Iloilo and Cebu, for which work they have the contracts. Balfour, Williamson & Co. will ship a large order of lumber to be used in the construction of scows, dredgers, etc. Hendricks & Glass, agents for the Standard Chain Company, are to fill a substantial order. The Rand Drill Company is to ship pneumatic tool equipments. The James Reilly Repair and Supply Company will supply two distilling plants, including pumps, condensers, etc. Fox Brothers & Company have taken a fair-sized order for blacksmiths' tools, etc. Armstrong, Walls & Co. have also been allotted an order for tools. The International Steam Pump Company—Blake Branch—has obtained an order for a number of pumps. The Allis-Chalmers Company has an order for the boilers. The Edward P. Hampson Company has the contract for several large hoisting engines, and Wonham & Magor has been awarded the order for steel dump cars.

THE HWANGPU (SHANGHAI) CONSERVANCY.

With reference to the scheme put forward by the Nanking Viceroy in substitution for the arrangement under the protocol of 1901, Mr.

Conger asked China what guarantee she would give that the work would be taken promptly in hand and carried to a completion. Yesterday, says the *Times*' Peking correspondent on August 7th, he received a reply. The Viceroy of Nanking had offered to contribute Tls. 460,000 (about £57,500) yearly, taking on himself the entire burden of the work, and yesterday the Waiwupu, in a despatch confirming the offer, informed Mr. Conger that China would pledge for the purpose the opium and inland revenues of Szechuan province, at present yielding Tls. 400,000 (about £50,000) yearly, and the opium revenues of Su-chow prefecture, in the north-west of Kiang-su, where in the old bed of the Yellow River the finest opium in China is grown, yielding at present Tls. 200,000 (about £25,000) a year. China states that these revenues are unpledged for any loan or service whatever. The proposal has been submitted to Washington, where it is expected to meet with approval.

CEYLON'S GRAVING DOCK.—Ceylon's Graving Dock, which is costing R5,648,880, will, when opened as anticipated in 1906, be the finest and largest in Asia, and indeed will probably challenge comparison with any of the dry docks available for the use of His Majesty's Navy. The Merewether dry dock at Bombay, the No. 1 dry dock at Hongkong, and the dry dock No. 3, now under construction at Singapore, are 500 feet long on the floor, or 200 feet shorter than the Colombo Graving Dock, the length of which originally was to be 500 feet, but which is now being increased to 700 feet at an additional cost of £28,700. The longest ships in the Navy—the *Good Hope* class—are 500 feet long; the broadest—the *King Edward VII* class—78 feet. The Colombo Dock will, therefore, easily accommodate the longest and largest British war vessels for many years to come; while as regards merchant ships it will take anything afloat.

THE SAMSON DREDGE, BRISBANE.—Negotiations have been proceeding for some time between the Queensland Government and Mr. Lindon Bates, for the purchase of the dredge *Samson* for work in connection with a contract for dredging the Mississippi. It is understood that the designer of dredges offered £50,000 for the vessel, but the Government agreed to deliver her in the Suez Canal for a cash payment of £60,000. Although it is believed that Mr. Bates would be satisfied with the price, he imposed conditions which the Government do not seem disposed to accept, but the negotiations still continue.

WHARVES AND GODOWNS, CHINKIANG.—Preparations are in active progress for the extension of the bundled River frontage from the vicinity of Golden Island to the Consular Bluff, which will give a stretch of about four miles along the River bank for the projected system of wharves and godowns. This work is being taken in hand vigorously by the foreign and Chinese officials; and a strong syndicate of Chinese speculators, under the skilled advice of a foreign expert, are buying up all the land they can lay their hands on near the River for godowns and residences.

HARBOR WORKS, PHILIPPINES.—The Lidgerwood Manufacturing Company, of New York, has secured further substantial contracts for equipment to be used in the harbor construction work at Cebu, Iloilo, Philippine Islands, the contracts—aggregating close on \$1,000,000—for the carrying out of which were lately awarded to J. G. White & Co. Eight hoisting engines were ordered last week. The contract now placed is for pile-driving machinery.

THE BOMBAY PORT TRUST LOAN.—BOMBAY, AUG. 30.—Tenders for the Port Trust Debenture Loans of 1904 were opened to-day, and tenders amounting to Rs. 36,40,500 at and over Rs. 104-1-0, were accepted in full, the balance of the loan, Rs. 9,500, was distributed pro rata among those who tendered at Rs. 104. The average rate of tenders accepted was Rs. 104-8-7, and the aggregate total of tenders received was Rs. 57,47,000.

DALNY DOCK.—Press dispatches from Saseho state that repairs on the Dalny Dock, the gate of which had been seriously damaged, were recently completed, and that the dock was opened for use on the 1st of September. In the vicinity of the dock seventeen large and small steamers had been sunk by the Russians. These vessels have all been refloated, and are now being used by Japanese military authorities.

RANGOON PORT LOAN.—The commissioners for the Port of Rangoon are inviting tenders for a loan of twenty lakhs of rupees against four and a half per cent debentures repayable at par on 15th October, 1934, for carrying out certain works connected with the Port of Rangoon.

DREDGING, CANTON.—It is expected that the removal of the artificial obstructions to navigation in the Canton River will simplify dredging work in connection with the proposal to improve the accommodation for shipping in the harbor at Canton.

THE HAIHO CONSERVANCY LOAN B., 3rd issue, Tls. 100,000, was applied for more than eleven times over.

SHIPBUILDING

MITSU BISHI DOCKYARD.—Business appears to be brisk at the Mitsu Bishi Dockyard and Engine Works at Nagasaki. According to the *Nagasaki Press*, the steamers which are now being built or arranged to be constructed there are eight in number. They comprise the *Tango-maru*, for the Nippon Yusen Kaisha's Seattle service; the Mitsui Bussan Kaisha's collier *Chohakusan-maru*, the two ferry boats to be used in the steamship intermediary service of the Sanyo Railway between Fusun and Shimonoseki, and four other vessels for the Osaka Shosen Kaisha's Osaka Chemulpo and South-China services. The *Tango-maru*, about 6,000 tons gross, is expected to be launched from the Tategami yard in November next.

THE TIN HING CO., HONGKONG.—A large engineering establishment worked entirely by Chinese. Chinese shipbuilding at Hunghom is also progressing. At the Kwong Tak Cheong Yard, which adjoins that of the Hongkong and Whampoa Dock Co., a river-steamer (to be launched to-day), two cargo-boats, and two steam-launches are being built; the river-steamer *Hai Nam* is undergoing repairs; and there are several other small jobs.

LAUNCH AT AMOV.—At the Amoy Engineering Company's works, on the 12th inst., was witnessed the launch of a small steamer, built especially for the local river trade, to the order of Messrs. Chun A Fat, Lui Kat and Charles Ah Sin. The vessel was designed by the manager of the above firm, Mr. J. D. O. Edwards, who was for some years chief engineer in the Douglas Steamship Co. The dimensions of this craft are as follows: Length B. P. 60ft.; breadth, 12ft.; M. depth, 6ft. The engines and boiler were built at the works, and in the opinion of an expert who was present at the launch, are of excellent finish and workmanship. The engines are compound, and of the surface-condensing type. The diameter of the cylinders are respectively 8in. and 16in. and stroke 9½in. The working pressure of the boiler is 126 lbs. With these engines, Mr. Edwards confidently expects the vessel to attain the speed of 9½ knots. The idea of building small steamers at Amoy to meet the requirements of the river trade is quite new, as formerly the vessels were bought second-hand at Hongkong; these vessels, however, being of such heavy draft as to impede seriously the up-river trade. Mr. Edwards was approached on the subject of building, and promptly took in hand the construction of this vessel, the result being a perfect success. This is the second launch from these works, the first being a small launch, for the purpose of doing the harbor work of the firm.—*S. C. Morning Post.*

HONGKONG AND WHAMPOA DOCK CO.—The recent mechanical improvements in the electrical line are working very satisfactorily. The new power house, situated near the main entrance, covers an area of 6,500 square feet. Steam appliances are everywhere being superseded. The new plant, when quite completed, will be capable of supplying over 1,000 horse-power. The various workshop machines are driven by motors, ranging in power from about eight to twenty horse-power. These motors are supplied from distributing switchboards. Before they were in vogue a great waste of power resulted from the necessity of working all the machines in a shop when only one, perhaps, was required. The new dynamos came from home, but the boilers were made at the Docks. The Dock employees are very proud of their machinery; they point out such features as the large 20 ton cranes; the bandsaw cutting through cold iron, and the new machine for rolling large ship and boiler plates. A new galvanizing shop is being constructed. The Docks are illuminated at night by numerous arc lamps.

STEAM LAUNCHES, CANTON.—Quite a large number of steam launches are now built and engined at Canton. Hitherto shipwrights had the machinery fitted at Hongkong, and although many of them prefer bringing the craft to this port for the purpose, others are trying their hand at it themselves. During the quarter, April-June, we find that out of eleven vessels measured for tonnage at Canton, there were eight built at that port, two at Hongkong, and one at New Jersey, U.S.A. Five were built and engined at Canton and two were placed entirely in the hands of Hongkong builders.

THE NEW KIUTOAN LIGHT-VESSEL was launched without ceremony from Messrs. Farnham, Boyd & Co.'s Pootung yard on Monday, and is now anchored in midstream, awaiting completion and the erection of her light. She has been built to the designs of Mr. J. R. Hardinge, Chief Engineer of the I. C. S. at Shanghai, and there are only about two other ships of her particular character in existence. She is of steel and will be gas-lit, and it is hoped to get her into position in about a month's time or less.—*N. C. D. News.*

NEW CRUISER, JAPAN.—An addition of about 3,000 tons displacement is now made to the Japanese Navy by the cruiser *Otowa*, which has just been constructed at the Admiralty yard of Yokosuka. The finishing touches to the vessel were completed a few days ago, and the cruiser is to be commissioned in a day or two. The launch took place from the Admiralty yard in November, 1903.

BUILDINGS

TANGLIN CLUB, SINGAPORE.—The Tanglin Club has under consideration a scheme for a new Club house, with residential chambers, tennis courts, billiard rooms, etc., in grounds of about seven acres. The proposed site is at the corner of Orchard Road and Orange Grove Road, and the entire cost of the scheme is estimated at \$300,000.

The cost of laying out the site and erecting the new building has been carefully gone into, and the total cost including site is estimated at \$310,000, which includes architects' fees, fittings, and all possible extras.

The following is a summary of the estimated expenditure:

New site...	\$ 61,500
Laying out grounds and road...	11,500
Cost of building...	175,000
Bowling alleys...	10,000
Furniture...	14,000
Stables...	7,000
Interest during construction...	14,000

\$293,000
A margin of \$17,000 is allowed for contingencies, bringing the total capital required to \$310,000. The Committee has had the premises of the present Club valued, and anticipates that a sum of \$20,000 could be obtained from them, which would reduce the capital required to be raised to \$290,000.

The proposed Federal Lunatic Asylum to be established at Kuala Lumpur is roughly estimated to cost \$300,000.

KUALA LUMPUR, F. M. S.—The American Mission is now inviting subscriptions towards the erecting of a new school building to accommodate 250 scholars from this neighborhood. The School will be an Anglo-Vernacular one, where, in addition to English, Romanized Malay, Chinese, and Tamil will be taught. The Government has promised to contribute \$5,000 towards the scheme, and Mr. T. Doraisamy Pillay has promised to build the central hall of the School at a cost of about \$2,000. A further sum of at least \$4,000 is required to carry out the project.

TECHNICAL COLLEGE, F. M. S.—Towkay Loke Yew has given \$30,000 towards the foundation of a Technical College for the F. M. S. A committee has been formed, consisting of the Resident, the General Manager F. M. S. Railways, the Director of Public Works, the Federal Inspector of Schools, and the Warden of Mines. The *Malay Mail* understands that the site of the new college will be somewhere in the neighborhood of the new railway workshops at Kuala Lumpur.

The large building at Chefoo being erected by Messrs. Cornabé, Eckford & Co. alongside the customs jetty, intended for a bonded warehouse, is well under way, and will add materially to the appearance of the water front.

NEW PALACE, NAN HAI.—The Empress Dowager's new palace at Nan Hai is nearing completion. The new palace consists of five buildings, and has been occupying the time and attention of two firms of contractors.

The Amir of Kabul is building two new palaces on the European model in the neighborhood of his capital. Iron work will be freely used in their construction, and the greater part of the materials required will be obtained from Europe.

MISCELLANEOUS

HOISTING MACHINERY, MANILA.—The engineering and contracting firm of J. G. White & Co. have just placed some fair-sized orders for various equipment, including hoisting engines, cable, etc., to be utilized in carrying out the work. The Lidgerwood Manufacturing Co., of Brooklyn, N. Y., will ship nine hoisting engines—eight 8½ x 10 inch double drum and one 6½ x 8 in. of the same type. John A. Roebling's Sons Co., of Trenton, N. J., secured the order for the hoisting cables. The American Hoist & Derrick Co., of St. Paul, Minn., has obtained an order for derrick fittings. Mr. John H. Pope, formerly the Atlantic Gulf & Pacific Co.'s representative in Manila, will have charge of the Cebu and Iloilo construction work.

SOAP FACTORY, WENCHOW.—Among local improvements at Wenchow may be noted, says Mr. Mortimore in his report for 1903, the establishment of a soap factory at Wenchow by a Chinese, who obtained the necessary knowledge in Japan; and of a small factory at T'ai Chow, where towels are made after Japanese style from yarn manufactured by the Ningpo cotton mills. Owing to the comparative cheapness of both products, they are obtaining a ready market.

CIGARETTE FACTORY, KOREA.—A new British enterprise, the Chemulpo Cigarette and Tobacco Company, was commenced in November, 1903. At first there were in operation six machines, and the possible daily output was estimated at 500,000 cigarettes. But the number of machines has been increased to nine, and by May there will be twelve of them in operation. About 375,000 cigarettes are turned out daily. Starting originally with 54 hands, the company has now in its service 245 men and boys.—*Br. Con. Rep.*

THE TANEGUCHI IRON WORKS, Saga Prefecture, Japan, will turn out 2,000 tons of 14-inch iron pipe, inquiries for the supply of which were recently made in this market. Eight firms tendered for the contract, including two Americans, one British and one Belgium. The accepted bid was \$66,700, approximately.

AIR COMPRESSOR PLANTS, NEW ZEALAND AND JAPAN.—The J. George Leyner Engineering Works Company, of Denver, Col., have secured a contract for a large air compressor plant from the Westport Coal Co., New Zealand; and for an air compressor, several drills, etc., for shipment to Japan.

NEW FLOUR-MILL IN HUPEH.—A native of Kiangsu is going to establish a flour mill in Hupeh. The wheat for the mill will be bought from Honan, and, after being ground into flour, will be ready for sale in Hunan, Szechuan, and Kiangsi.—*Eastern Times*.

COPPER MINTING, CHINA.—The copper mint at Nanking can turn out a few more than 1,000,000 coins per day, and the annual profit is Tls. 350,000, a third of which is put aside to defray expenses of education, and the other portion will go to meet the heavy military outlay in Kiangsu.

RICE MILL BURNED, BANGKOK.—A rice-mill belonging to the Kim Seng Lee firm was burned down a few days ago in the Sam Sen district of Bangkok. It was quite a new mill and had only been working for a month. The damage is set at 800,000 ticals. The insurance came to 240,000 ticals.

MACHINE TOOLS, MANILA.—Manning, Maxwell & Moore, of New York, have secured a substantial contract for equipment to be installed in the machine shops of the Manila Electric Railroad.

RAILROAD SUPPLIES, CANTON.—Joseph Lind, superintendent of the Canton-Hankow Railway, whose headquarters are at Canton, China, desires to secure catalogues and price lists of all kinds of railroad supplies.

Large Japanese orders for steel rivets for immediate delivery have put an end to the strike in the South Staffordshire and North Worcestershire rivet and bolt trade. The employers have conceded advances ranging from 15 to 20 per cent.

The Japanese Government has decided to establish meteorological stations at Newchwang, Yongampho, Dalny, Chemulpo, and Fusan.

A London telegram to the *Asahi* announces that the Carnegie Iron Works at Pittsburg have received an order from Japan for a large supply of nickel and steel plate.

The Allis-Chalmers Company, 71 Broadway, has a large Chinese order in hand for mining machinery.

MACHINERY FOR THE PHILIPPINES.—Mr. Frank L. Strong, the local representative of several of the best known machinery manufacturers of the United States, recently secured some interesting orders for machinery to be used in the equipment of the Coast Guard machine shops on Engineer Island. The machine tools are all from the Miles-Bement-Pond combination and consist of a 42-in. planer, 16-in. slotting machine, horizontal boring machine, and a Flanders' electrically-driven boring mill for cylinders, for boring in place. Machinery for the power plant has also been placed through him and will go to the Allis-Chalmers Co., whose interests Mr. Strong represents in the Islands. The main plant will consist of two 125 H. P. tubular boilers, 72 in. x 6 ft., with pumps, stack, fittings, etc. The engine will be a 18 x 30 Standard Reynolds Corliss from the Allis-Chalmers works, guaranteed to give 370 H. P. at 1-4 cut off, working under a pres-

sure of 150 lbs. Mr. Strong has also been successful in securing an order from the Government for a large Gates Stone Crusher, which is also a product of the Allis Chalmers Combination. This is intended for use at Binangonan on the Laguna, for crushing rock for the city.

MINING IN THE PHILIPPINES

A 10-stamp mill purchased by the Orion Gold Mining Co. from the Joshua Hardy Co., for their workings in Masbate arrived on the *Manchuria*. A large bucket dredger built by the Risdon Iron Works for the Masbate Gold Mining Co. also arrived on the same steamer, but owing to the distribution of the cargo was carried on over to Hongkong. The dredger has a capacity of 3000 cubic yards daily, and its reported cost was \$60,000. Mr. Kimball, the mining engineer who came here from New York to report on the claims for the company, is to erect the dredge and superintend the operations.

Several other important orders for mining machinery are reported, but little accurate information is available, as nearly all the interested parties are keeping quiet about their claims and development plans.

M. A. Clarke, the enterprising Manila confectioner, who has some valuable claims in the Benguet region, is said to be preparing to purchase a 10-stamp mill to work his properties.

The Philippine Gold Mining Co. has also purchased a stamp mill, which was made at one of the local foundries, but has experienced some difficulty in transporting the machinery to its destination in the Benguet district. We learn that Mr. J. Kelly, who has a valuable claim at Antinook, Benguet, will order two 3-stamp batteries to work in connection with a cyanide plant. Reports from Masbate are to the effect that there are several first-class claims surveyed, and considerable development work is in progress. The claims are both placer and ledge, and that ore of the latter is low grade and free milling. Water power is at hand in sufficient quantity to operate all the mills.

THE HONGKONG HOTEL CO., LTD.

The half-yearly meeting of shareholders in this Company was held at the hotel, last month. The report showed that the net profit on working account amounted to \$95,078 as compared with \$132,016 for the corresponding period of 1903, being a decrease of \$36,938. It was proposed to pay a dividend of 10 per cent on capital, to write off \$7,207 from value of furniture and fixtures, to transfer \$10,000 to repairs and renewals account, and carry forward a balance of \$11,669 to new account. The falling off in profits was chiefly due to a decrease in the numbers of the travelling public, and to a smaller extent to the opening of a number of small hotels and boarding-houses. The Report and accounts were carried unanimously.

THE DALLAS HORSE REPOSITORY CO., LTD., SHANGHAI

Report for the year ending 31st May, 1904, presented to the shareholders at the first annual meeting, held on the 30th September:

From the statement presented it will be seen that the net profit for the twelve months under review amounts to Tls. 22,527.17, and the directors propose to apportion this sum as follows:

To pay a Dividend of 8% per annum, which will absorb.....	20,000.00
To write off Good Will Account (in addition to the small item already dealt with).....	1,000.00
To write off Flotation Expenses (legal expenses, advertising, printing, etc).....	917.80
To carry forward to New Account....	609.37
	Tls. 22,527.17

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**WAR DEPARTMENT,
BUREAU OF INSULAR AFFAIRS,
WASHINGTON.**

August 25, 1904.

Sir:

There has just reached me a copy of the July number of "The Far Eastern Review," which I have looked over with keen interest. I believe you have begun a publication which will be of great aid to persons interested in the development of the Philippine Islands. It is very interesting and wonderfully well gotten up.

I have placed you on the list to be furnished gratis a copy of our monthly summary of Philippine Commerce, prepared in this office, and would be glad to have you place this office on your exchange mailing list. I congratulate you.

Very truly yours,

To the Publisher,
Far Eastern Review,
McCullough Building,
Manila, P. I.

C. R. EDWARDS,
Colonel, U. S. Army,
Chief of Bureau.

"Your publication is very creditable, and if you can keep up the pace which you have set, it ought to be of great value."—HON. DEAN C. WORCESTER, *Secretary of the Interior, P. I.*

"The first paper I have ever known to surpass its prospectus."—HON. JAMES F. SMITH, *Secretary of Public Instruction, P. I.*

"Glad to get your magazine and hope you will be able to keep it up to the high standard you have started."—MAJOR GENERAL L. HONARD WOOD, *U. S. A.*

"It merits success, and, I believe, will win it."—MR. J. W. BEARDSLEY, C. E. (*Consulting Engineer to the Philippine Commission.*)

"It deserves hearty support."—*American Bank, Manila.*

"I trust it will have the success it merits."—MR. A. J. G. DENNY, *Mining Engineer, Tientsin.*

"I consider it a journal equal to any of its class published at home."—W. G. WINTERBURN, M. I. M. E., GEN. MGR. GEO. FENWICK & CO., *Hongkong.*

"A splendidly gotten up paper. I congratulate you on it."—MR. C. HEDEMANN, *Gen. Mgr., Honolulu Iron Works.*

"Ably edited and most interesting. A great benefit to the Islands."—LT. COL. GEO., K. McGUNNIGLE, *17th Inf., U. S. A.*

"Your publication gives valuable information, which should be had by all our offices. We wish you continued success."—HENRY W. PEABODY & CO.

"We have looked your magazine over carefully, and wish to compliment you on its style and tone."—THE SHERWIN WILLIAMS CO., *Cleveland, Ohio.*

"Read with great interest."—ZIMMERMAN-WELLS-BROWN CO., *Portland, Or.*

From the ***Kobe Herald***, Kobe, Japan.

We have before us copies of the third and fourth numbers (August and September) of the *Far Eastern Review*. This publication, which is issued at Manila, is a very high class production, and deserves a very large measure of success. Both paper and printing are of excellent quality, and the numerous illustrations are quite admirably produced. Although published in the Philippines, the contents of the *Far Eastern Review* by no means deal solely or mainly with matters connected with those islands. The whole field of the Far East is adequately covered, and residents in any part of it are sure to find something in this publication which will appeal to their special interests. The *Review* is principally devoted to the subjects of engineering, commerce, and finance, but the letter-press is so bright and interesting that it appeals to the general reader quite as much as to the specialist. Among the articles in these

two numbers, we may mention: "The Mitsu Bishi Dockyard at Nagasaki," "Osaka Harbour Works," "The Austrian Liner Nikko Maru," "The Docks of Messrs. Farnham & Boyd," and a particularly interesting account of the gutta percha industry in the Philippines. This really capital review, which costs 25 cents (U.S.) per month, is published by Mr. G. Bronson Rea, M. E., Plaza de Goiti, Manila. We wish it a long and prosperous career.

From the ***North Borneo Herald***, Sandakan, B. N. B.

We have much pleasure in acknowledging through our columns the receipt of the first issues of the *Far Eastern Review*, a commercial and engineering journal, published monthly in Manila. The journal is well illustrated with reproductions of photographs and contains a large quantity of construction, engineering, mining and financial news gathered from all sources and referring to all parts of

the Far East, including North Borneo. We can endorse what the Editor says, *viz.*, that this is the era of development for the Philippines and Eastern Asia, and as yet only the fringes of the great East with its countless cities and teeming millions are being exploited: further inland lie the greatest markets of the world.

From the ***North China Daily News***, Shanghai, China.

No. 3 of the *Far Eastern Review* is to hand, and it is undoubtedly the best number which has come under our notice. It has an excellent article with a halftone plan of the proposed Huangpu improvements, and Engineering, Trade, and Finance seem to be dealt with from every port in the Far East. For a complete monthly record of what is going on in these lines in the East it cannot be excelled. Nothing of interest during the month with which it deals has been omitted.

AMERICAN FLOATING EXPOSITION

The announcement is now definitely made by the Northwestern Commercial Company of Seattle that the s.s. *Victoria* specially fitted, will sail November 15 next with American commercial representatives and exhibits, for all parts of the East Asiatic coast, Australia, New Zealand, Chile, Peru, Hawaii, etc.

Describing the enterprise in a word—some hundred gentlemen representing American manufacturers and other commercial interests, with their exhibits, will make a six months cruise aboard the s.s. *Victoria*, visiting all points of commercial importance in the territory named, and accomplishing at these points such business as they may, in establishing branch offices, agencies, making sales of goods, and generally introducing their interests. Some of the passengers will regard the cruise largely from the point of commercial investigation. Again, the management of the *Victoria* hope to accomplish much in a general way—the passengers will be a very representative American body, and it may be anticipated that as such the impression made upon the commercial communities at the different ports of call will prove not only profitable in a commercial sense, but will also reinforce the strongly amicable feeling for America now pregnant throughout the Pacific.

The *Victoria*, it may be noted, is owned by the Northwestern Steamship Co. of Seattle, the president of which concern, Mr. J. Rosene, is also president of the Northwestern Commercial Co., and the North Coast Lighterage Co., and is well known in association with large Alaska and Siberia enterprises. The Northwestern Steamship Company also owns the *Olympia* and *Tacoma*, sister ships of the *Victoria*. All these vessels were engaged until this spring in the Transpacific passenger and freight carrying trade, for some years, in connection with the Northern Pacific Railway Co., and are well known in Pacific shipping circles for their record mail carrying, and fast tea and silk freight service for New York. They are particularly handsome craft, and registered at Lloyds. The *Victoria*'s passenger accommodation has been just extended and renewed at a cost of \$100,000. She can now accommodate 226 first class passengers, but 100 actual exhibitors only will be taken, while 125 is the maximum number to be registered for the trip, it being expected that some 25 of the exhibitors will be accompanied by their wives. No other passengers than these will be carried.

The lower decks of the *Victoria*, ordinarily used for second class passengers, will be fitted up for the exhibit rooms. They will be decorated in very tasty manner and brilliantly lighted with electricity. Moreover, steam and electric power will be furnished to any exhibitor requiring same. The exhibit rooms will be open from 8 a. m. until 11 p. m. while in foreign ports. No other cargo than exhibits will be carried, the vessel being given up exclusively to the exposition purpose. All exhibits can be arranged and set in place before sailing from Seattle, and there will never be any necessity for unpacking or repacking.

The itinerary of the voyage will be Seattle to Yokohama first, thence to Kobe, Nagasaki, Shanghai, Hongkong, Manila, Singapore, Colombo, Adelaide, Melbourne, Sydney, Wellington, Port Lyttleton, Auckland, Valparaiso, Callao, Honolulu, and then again to Seattle, after completing the entire circuit of the Pacific and the east of the Indian ocean. While this is the general route, and all ports named will be called at, it is also planned to make the tour more effective for exhibitors by calls at minor ports. For instance, the *Victoria* will probably steam close to Canton, making wharf at Whampoa, and thus giving opportunity to approach the important interests of the West River more closely than at Hongkong. Again Tientsin, a growing port, and Newchwang, should the war permit, may be visited. The vessel will remain from two to ten days at each point, as importance may decide. This stop gives opportunity for the full accomplishment of business. The *Victoria*, it should be stated, is not of heaviest draft, and can make wharf proper at such difficult ports as Shanghai.

It is anticipated that American Consuls will

assist greatly in advertising the *Victoria*'s cruise, and they are notified in advance of the purposes of the voyage. It is expected that merchants distant from the ports of call will be notified by Consuls and the press, and exhibitors may therefore anticipate very satisfactory attention in this regard. Again, the public press will be given the full list of names of passengers and their business.

The time of year for the making of this voyage has been remarkably well chosen, it being most seasonable throughout the route of the *Victoria* at this date. The Orient, as has been often pointed out in these columns, is peculiarly ripe for the introduction of very many lines of American commerce. Scores of firms on the route of the *Victoria* are in the position of requiring to know what Americans have to offer. Australia and New Zealand, and Pacific South America, are peculiarly valuable fields for exploiting just now also, owing to the new transportation that has developed within the past two years with these territories from both sides of the United States.

The deck plan of the *Victoria* as published for intended participants shows the entire deck forward on the main deck, and the entire deck fore and aft under the main deck, reserved for exhibits. This makes a very practical and spacious arrangement. Passage for the entire voyage, including meals, berth, and from 100 to 500 cubic feet of space for exhibition purposes, as well as space for 5 tons of cargo to those wishing to sell goods direct during the voyage, will be from \$1,500 to \$2,500, according to location of stateroom selected, and the amount of space required for exhibition purposes. The ship's crew will be at the disposal of passengers for installing and taking care of exhibits, free of charge, and no charge is made for light and power.

Among the firms engaging space and negotiating therefor at present may be mentioned the Yale & Towne Manufacturing Co., the well known lock and hardware house; the Pacific Coast Biscuit Co., the cracker and candy trust of the Pacific Coast; the National Sewing Machine Co.; the Philadelphia White Bronze Monument Co.; the Wolf Co., flourmill and transmission machinery house; the Erie City Iron Works; the Winona Wagon Co.; the Krell-French Piano Co.; the Benicia Agricultural Works; the Chattanooga Wagon Co.; Seabury & Johnson, medical and surgical specialty manufacturers, etc., etc. The *Victoria*, in fact, will bring together a remarkable number of American manufacturing specialists, representative and interesting in every sense to the foreign Pacific field.

Recently, it may be mentioned, a British floating exposition sailed from London, and Germany has had one successful floating exposition and is arranging another. They are therefore no experiment.—*American Asiatic*.

THE PRAYA EAST RECLAMATION

The administration of His Excellency Major Sir Matthew Nathan is about to be initiated by one of the most important public works of the many large and similar undertakings which the Colony has begun and carried into completion in the past. The reclamation of the western foreshore of the island is now an accomplished fact; the reclamation of the Kowloon sea front, extending from Tsimtsatsui to Yaumati, has long been completed. And the bay between Kowloon Point and Blackhead's Hill, which was acquired by the Hongkong Land Reclamation Company, is now in process of being filled in, and before many months have elapsed a huge area will be added to the building sites available across the harbor. About four years ago, the Hon. Mr. (now Sir) C. Paul Chater, C. M. G., to whom must be credited the conception of the big schemes for which Hongkong has been renowned, planned the reclamation of the eastern foreshore from Arsenal Street to the East Point Refinery, at Causeway Bay. His idea was to increase the building area of the Colony, at the same time to give a continuous road along the seafront from west to east of the Island. But the Admiralty Dock became the stumbling block, and the reclamation, devised for the eastern part of the city, will, when car-

ried out, be cut into two by the naval works in the very heart of Victoria. It is in connection with this latter reclamation that we have now to refer with considerable pleasure in these columns. For several years, although the plan has been matured in the mind of the promoter of the scheme, the innumerable obstacles which beset the undertaking by reason of the objections raised to minor details on the part of the Naval and Military authorities, it has had to be held in abeyance. These have happily now been overcome, and the information, which reached us this morning, is to the effect that sanction had been obtained from the Colonial Office to put the project into operation almost at once. That color is lent to the correctness of the report will be found in the fact that contracts have been made for the supply of certain materials which will be required in the carrying out of this big scheme. We are not to disclose the nature of the contracts entered into with a Hongkong firm for the material of its own production. Suffice it to say, that the concurrent carrying out of the reclamation gives an undoubted impetus to a local industry which is renowned for the excellence of its product throughout the East, the Philippine Islands, and even in the United States. At this stage it will be useful to recapitulate some of the details of the scheme with whose completion will be seen the addition of an immense area, with deep water frontage available, in that portion of the Island, the foreshore of which has been silted up to a degree as noxious as it is insanitary to the inhabitants residing within that district. We summarize the details of the scheme as presented by the Hon. Sir Paul Chater to a meeting of the owners and agents of lots in the Praya at Wanchai, held at the City Hall in April, 1901. The idea, he explained, is to reclaim from the sea a strip of land, very nearly a mile in length, extending from the Arsenal to the East Point Sugar Works and (except in front of Jardine's premises and the Sugar Work) not less than five hundred and twenty feet in depth from front to back. This will allow of the widening of the present praya from 50 feet to 75; of a new praya 75 feet in width, and of a main street running through the centre of the reclaimed land, from west to east, also of 75 feet in width. Thirteen thoroughfares, each fifty feet in width, will run from the present praya to the new one, dividing the reclaimed area into convenient blocks. There will then be left 345 feet in depth of building land in two blocks, to be divided out among the lot holders in proportion to their respective frontages. A lot holder, therefore, having a frontage of 50 feet will be entitled, broadly speaking, to 345 by 50 or 17,250 square feet of land, for which the Government propose to charge 25 cents a foot by way of premium, and \$200 a quarter acre by way of Crown rent, and for which they are prepared to grant a Crown lease for 99 years with the option of a renewal for another period of 99 years at a rent to be fixed by the Governor for the time being. Sir Paul's original suggestion was for the acquisition of Morrison Hill and of the Naval Hospital Hill, and for the removal of both these impediments to the expansion of our City eastward and to its more perfect ventilation. Unfortunately, the Naval authorities had, before his proposals were submitted to the Government, made all arrangements for the enlargement of the present Naval Hospital and for the construction, on the opposite spur, of an Epidemic Hospital in connection therewith, and so were unable to assent to the suggestion for the removal of their establishments to more healthy and less crowded sites at Kowloon. The improvements already effected in the Queen's Road, from the Parade Ground to the Arsenal, and the completion of the Tram, has facilitated the movement of the population from west to east, and the character of the new district with its broad thoroughfare, wide streets and sanitary buildings will attract a large population. Sir Paul estimated the cost of reclamation, sea wall praya, streets, sewers and all expenses, at a figure not exceeding 75 cents per square foot of available building land, and, even if the cost should, through any unforeseen events, run up even to \$1 a square foot, the land, he said, would still be worth having at that figure.—*Hongkong Telegraph*.

THE GUTTA PERCHA AND RUBBER OF THE PHILIPPINE ISLANDS

By PENOYER L. SHERMAN, Jr., Ph. D.

(Continued.)

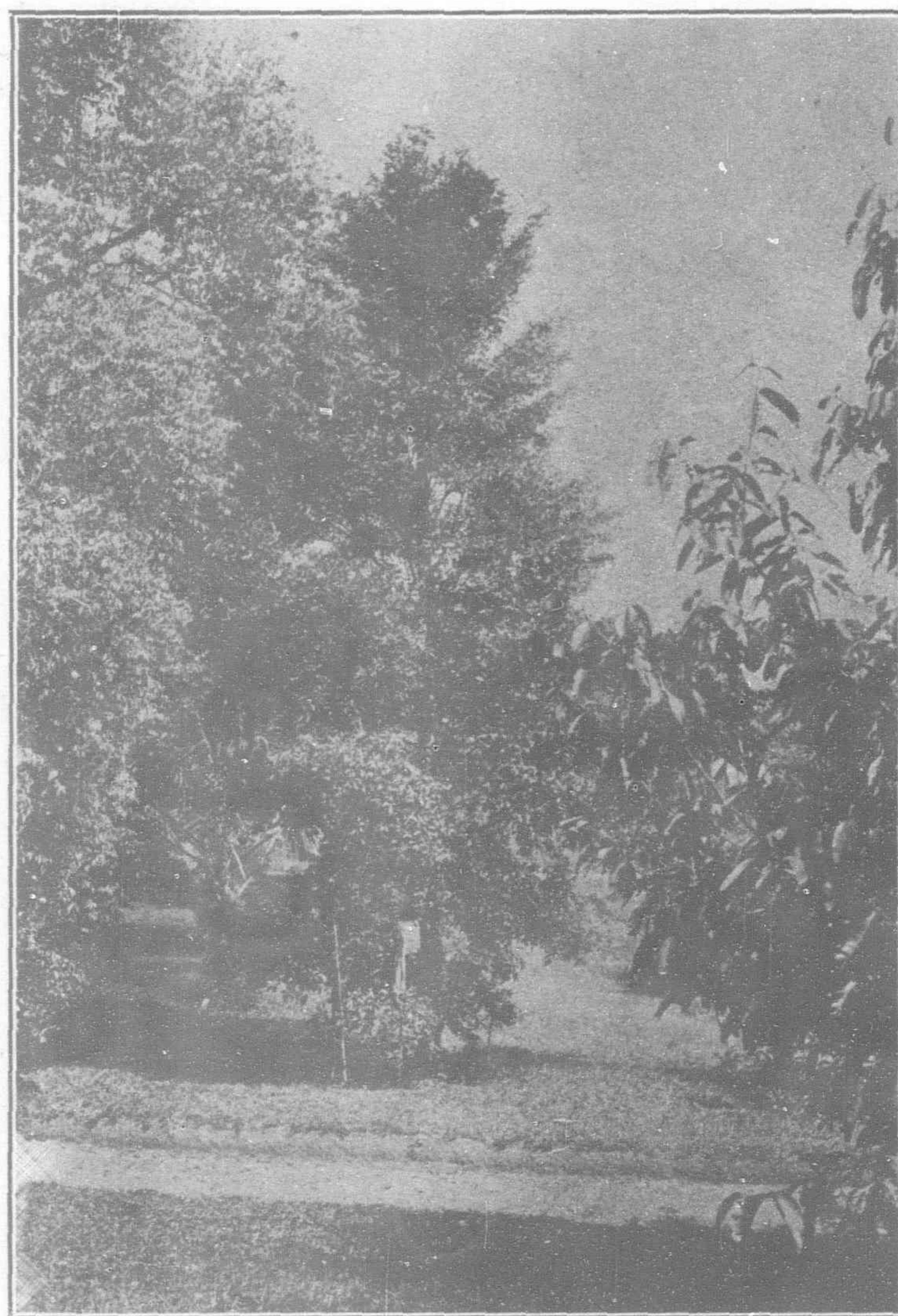
VII. CHEMICAL PROPERTIES.

A chemical examination of the milk or latex above referred to as coming from the gutta percha trees upon wounding the bark shows it to be composed of an emulsion of water and oil in a finely divided state. According to the species of tree the water varies from a small (best species) to a very large

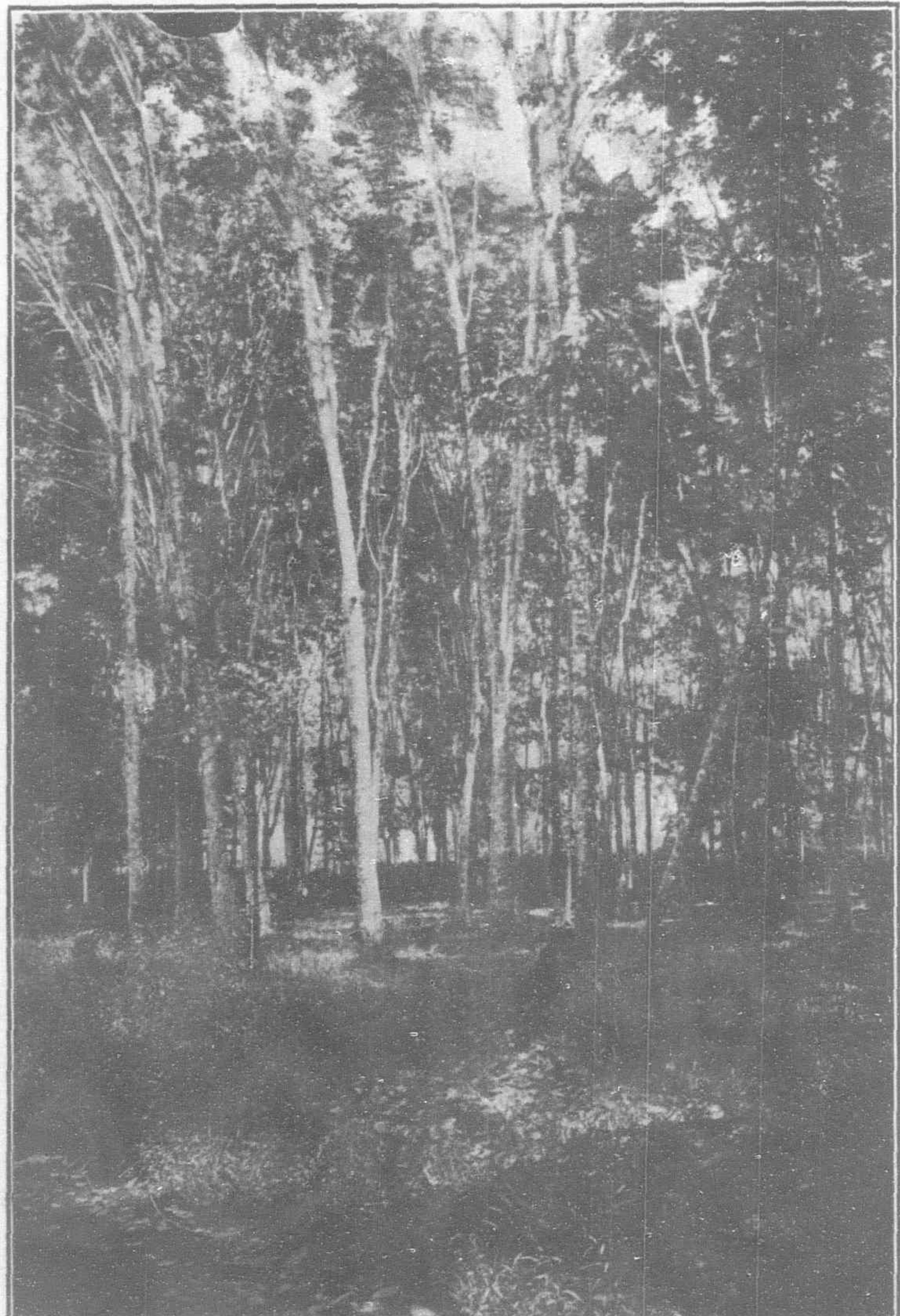
fingers the hardening process or coagulation takes place very quickly, and by boiling or adding certain chemicals, such as mineral or vegetable acids, alum, salt, etc., it takes place almost instantaneously. What the nature of this hardening process is, appears to be unknown. The subject will be investigated in this laboratory.

After coagulation sets in (see below), the oily portion becomes hard and tough while

By subjecting it to the action of cold alcohol, a yellow amorphous resinous powder can be extracted. Hot alcohol further extracts a white crystalline resin, leaving a tough horn-like residue, which is easily soluble in chloroform and carbon bisulphide and can be precipitated from these solutions by alcohol as a white flocculent mass, which by warming or through pressure quickly returns to its



A PALAQUIUM GUTTA TREE GROWN IN THE OPEN, SHOWING THE TENDENCY TO BUSH. BOTANICAL GARDEN, SINGAPORE, STRAITS SETTLEMENTS.



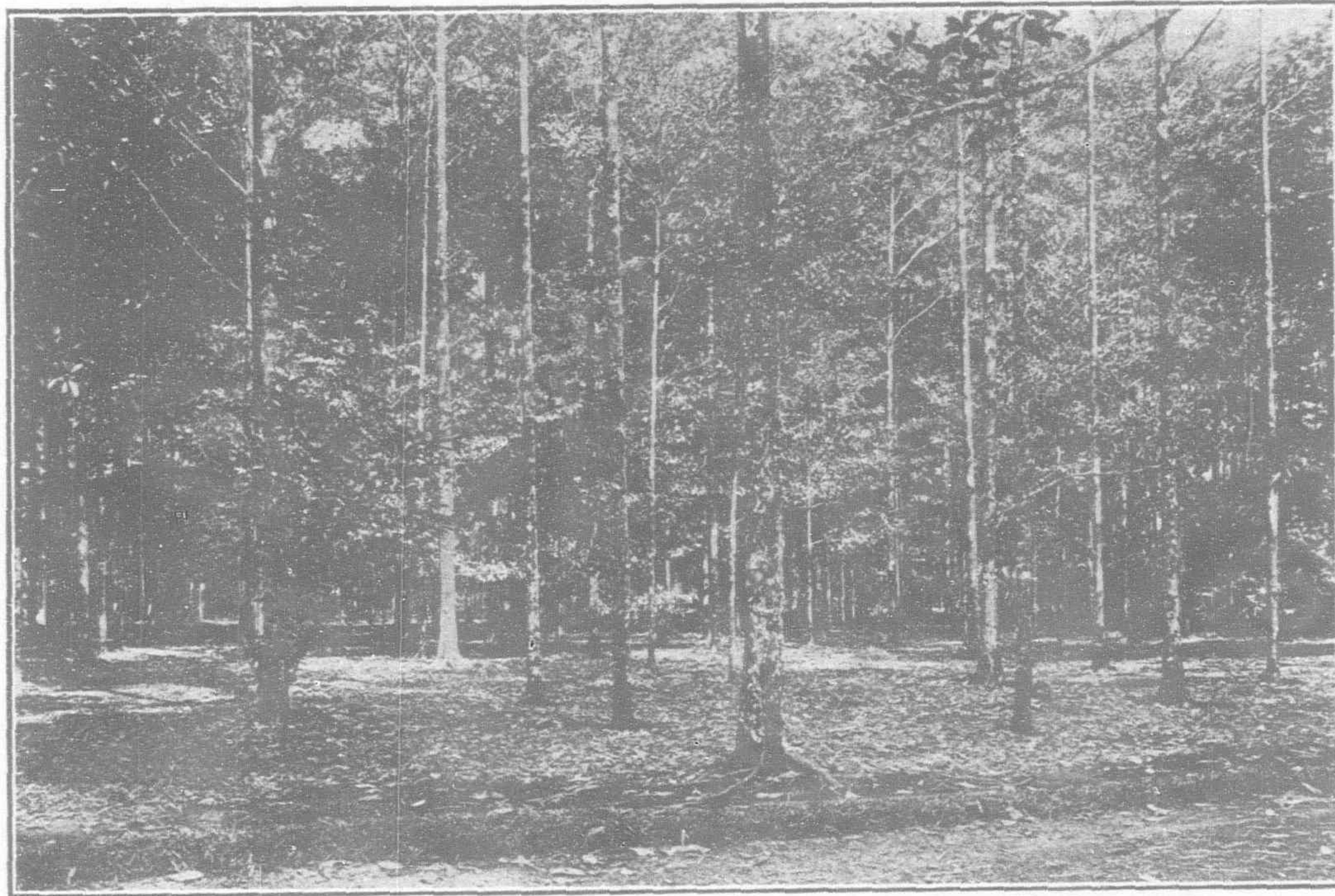
PLANTATION OF PARA RUBBER TREES (HEVEA BRAZILIENSIS) PRODUCING SEED. BOTANICAL GARDEN, SINGAPORE, STRAITS SETTLEMENTS.

percentage (poor species). A drop of the milk caught on the finger undergoes no apparent change for a few minutes, but by the end of this time a thin rubbery scum can be observed to have formed on the surface. If this be removed a second film will form, and so on until the entire drop has become a small piece of a tough, leathery substance. When a fresh drop is worked between the

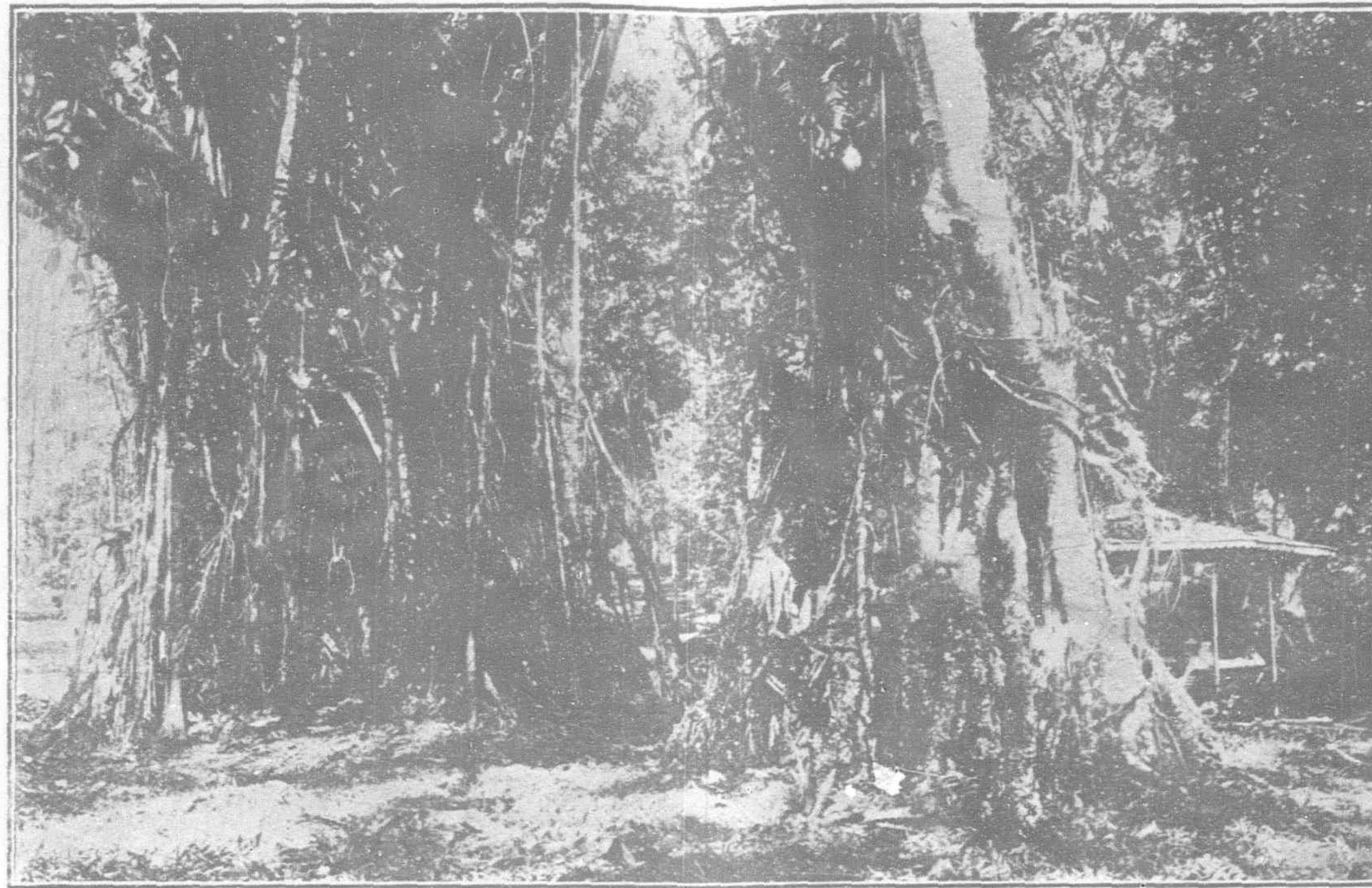
most of the water separates or is inclosed mechanically. Subjecting this hard and tough mass, taken for example from the *Palaquium gutta* species, to further examination, it proves to be insoluble in water and very stable against the action of either dilute acids or alkalies. In chloroform or carbon bisulphide it is easily soluble, while ether, petroleum ether, and alcohol dissolve it only in part.

original appearance. Taking the three constituents of gutta percha in the order described above, the names Fluavil, Albati, and Gutta were given them by Payen (15) in 1852. Besides these constituents, all gutta percha was found to contain more or less dirt, coloring matter, and water inclosed mechanically.

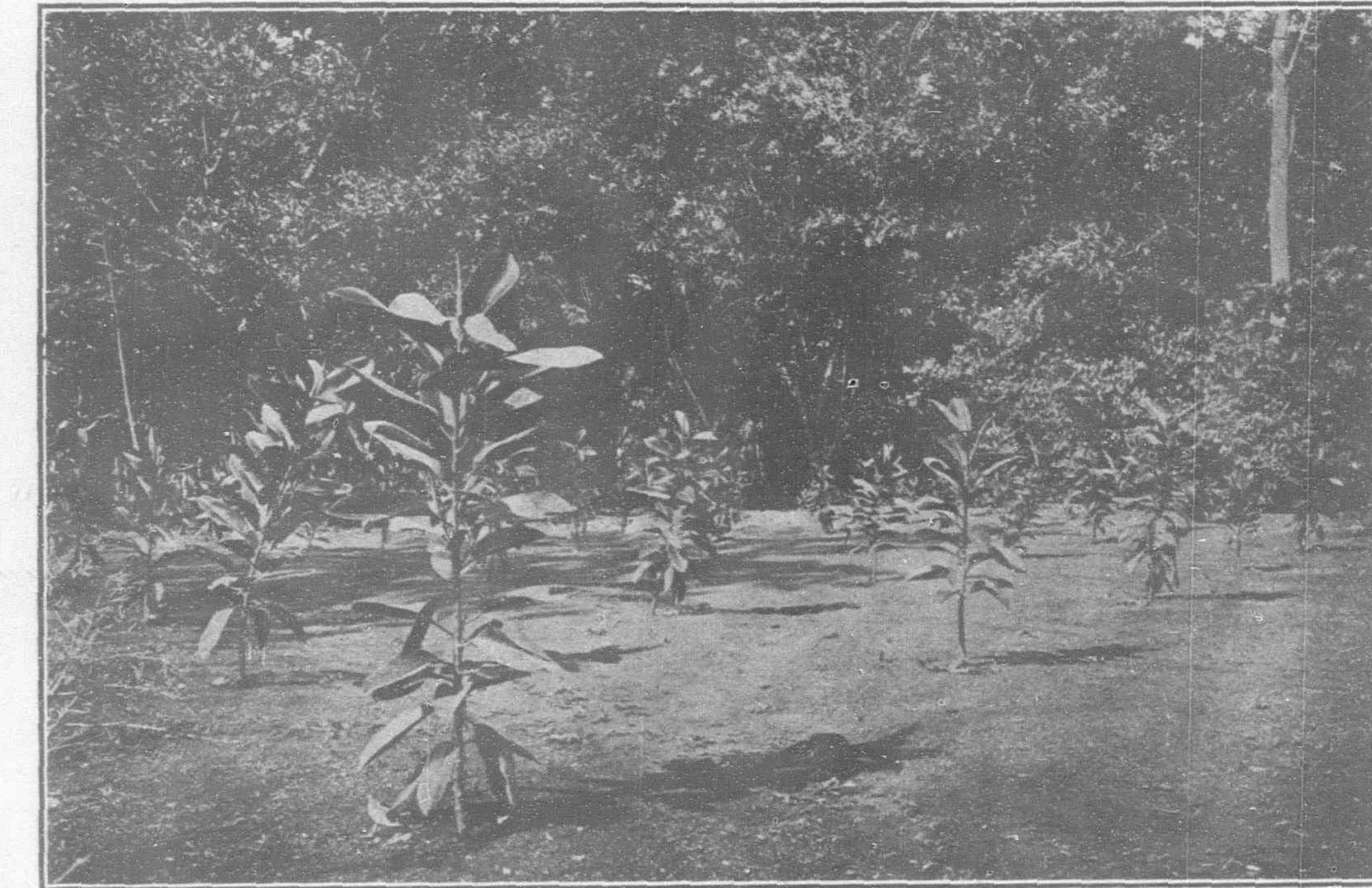
TABLE NO. 2.—Analyses of representative samples of gutta percha from Singapore and



PLANTATION OF GUTTA PERCHA TREES (PALAQIUM GUTTA) OF VARIOUS AGES. BUITENZORG, JAVA.



LARGE INDIA RUBBER TREES (FICUS ELASTICA L.). BUITENZORG, JAVA.



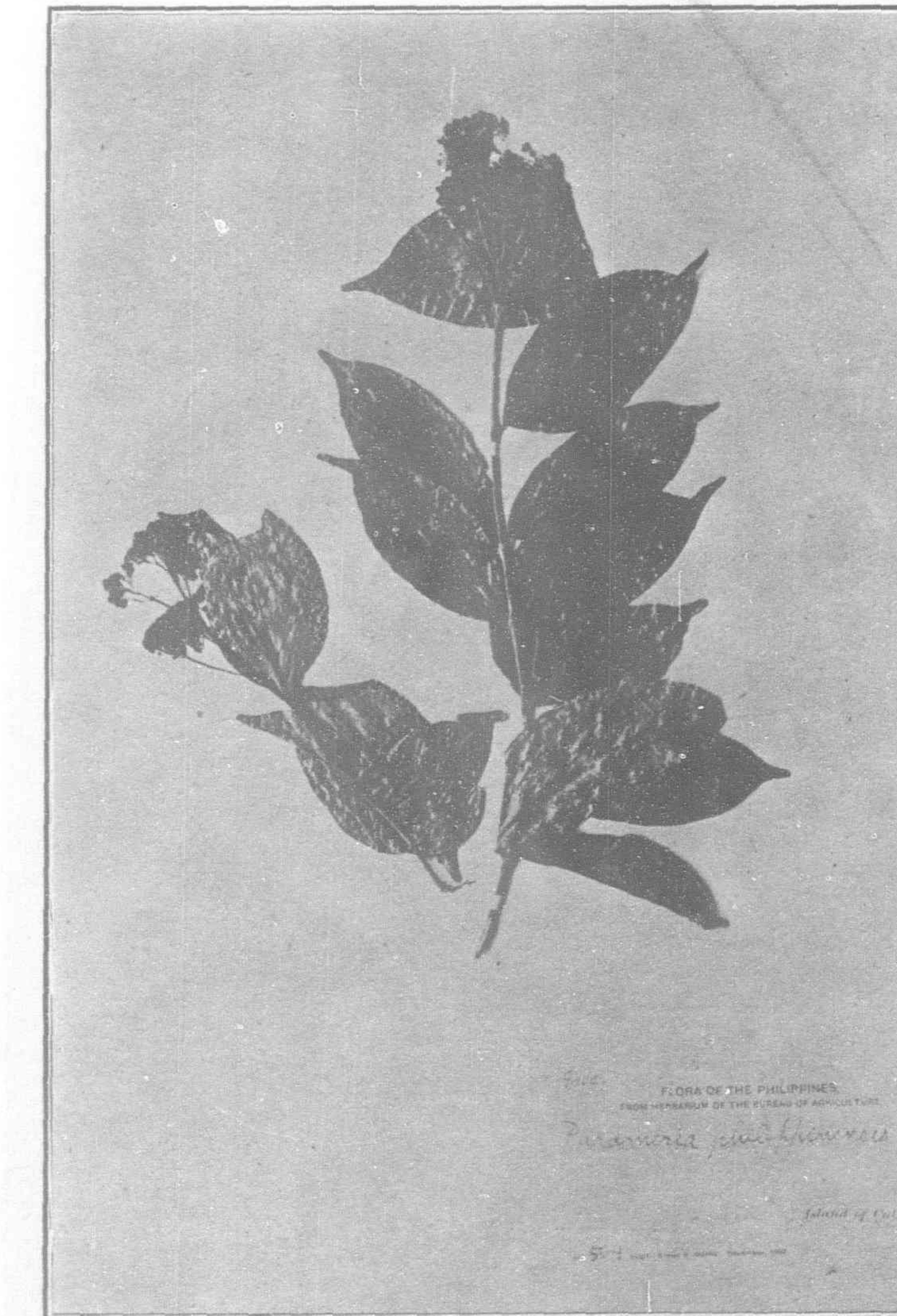
PLANTATION OF OLD AND YOUNG INDIA RUBBER TREES (FICUS ELASTICA). THE YOUNG TREES STARTED BY MARCOTTAGE. BUITENZORG, JAVA.



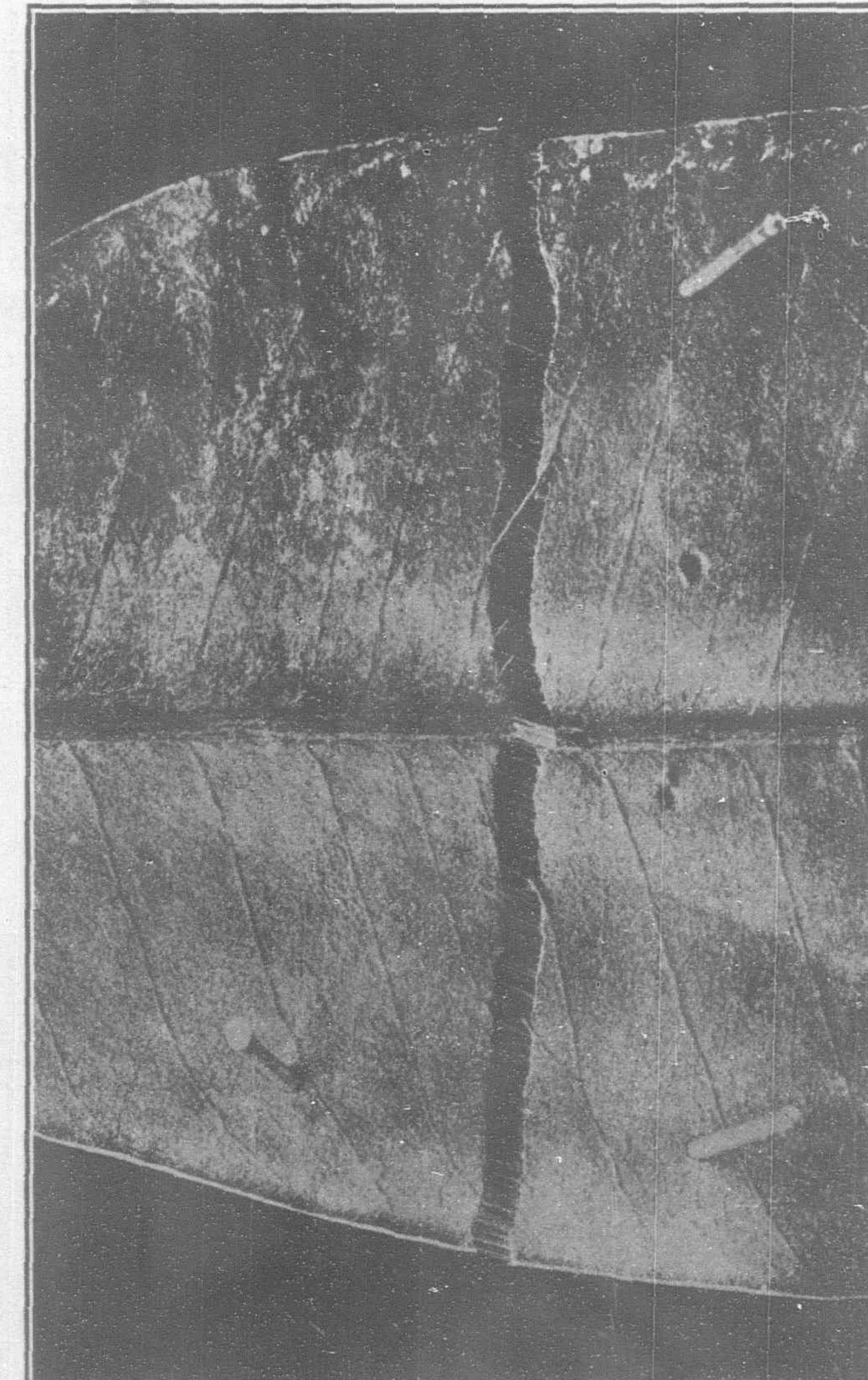
SHOWING THE METHOD OF PROPAGATING GUTTA PERCHA TREES BY MEANS OF MARCOTTAGE. BUITENZORG, JAVA.



RUBBER VINE FOUND IN TAWI-TAWI, BASILAN, AND MINDANAO. SPECIES UNDETERMINED.



RUBBER VINE (PARAMERIA PHILIPPINENSIS RADLK.) GROWING IN GREAT ABUNDANCE IN THE ISLANDS OF MINDORO AND CULION.

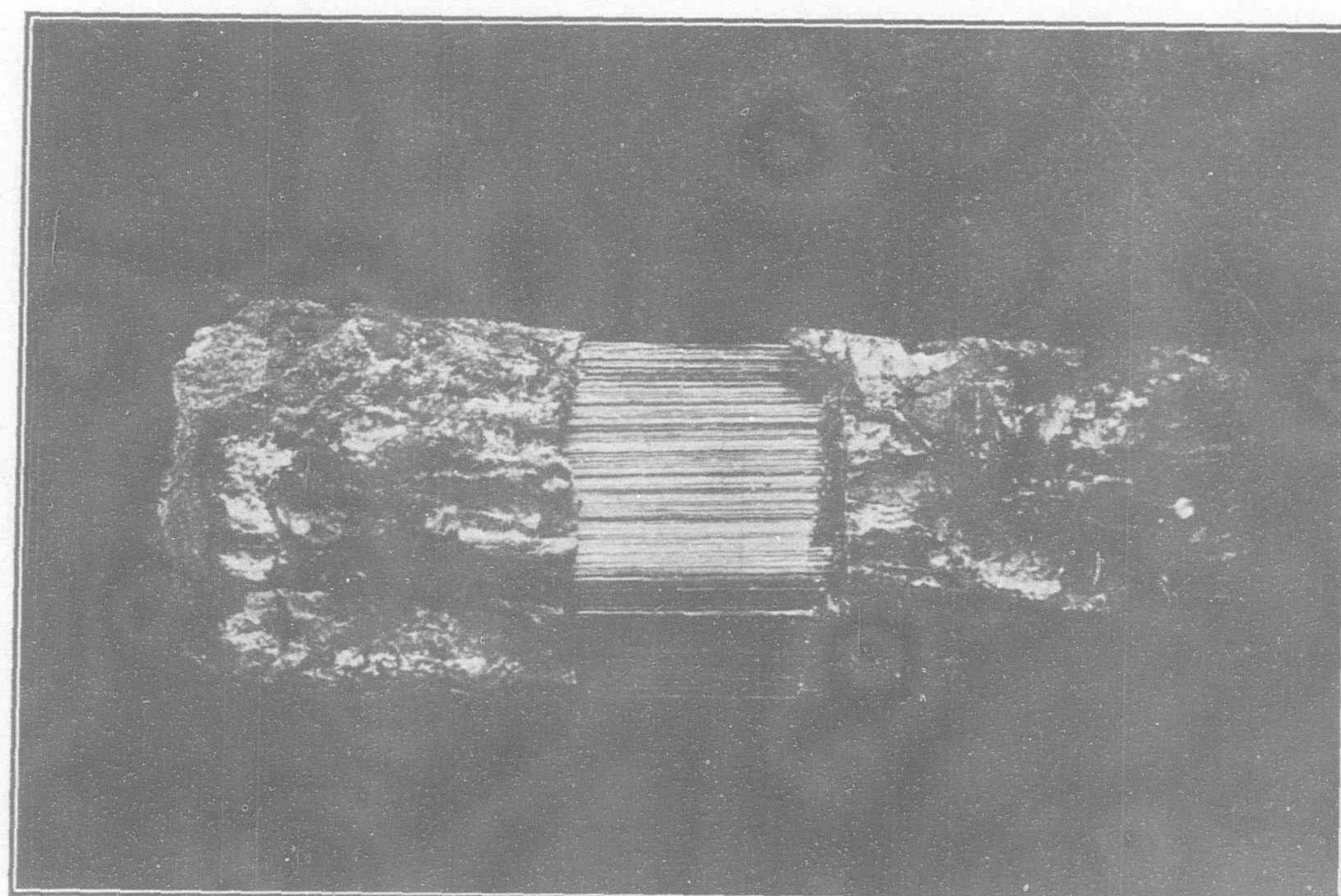


GUTTA PERCHA LEAF (PALAQIUM GUTTA) ENLARGED, SHOWING THE FIBERS OF GUTTA PERCHA PERMEATING THE LEAF INTERIOR.

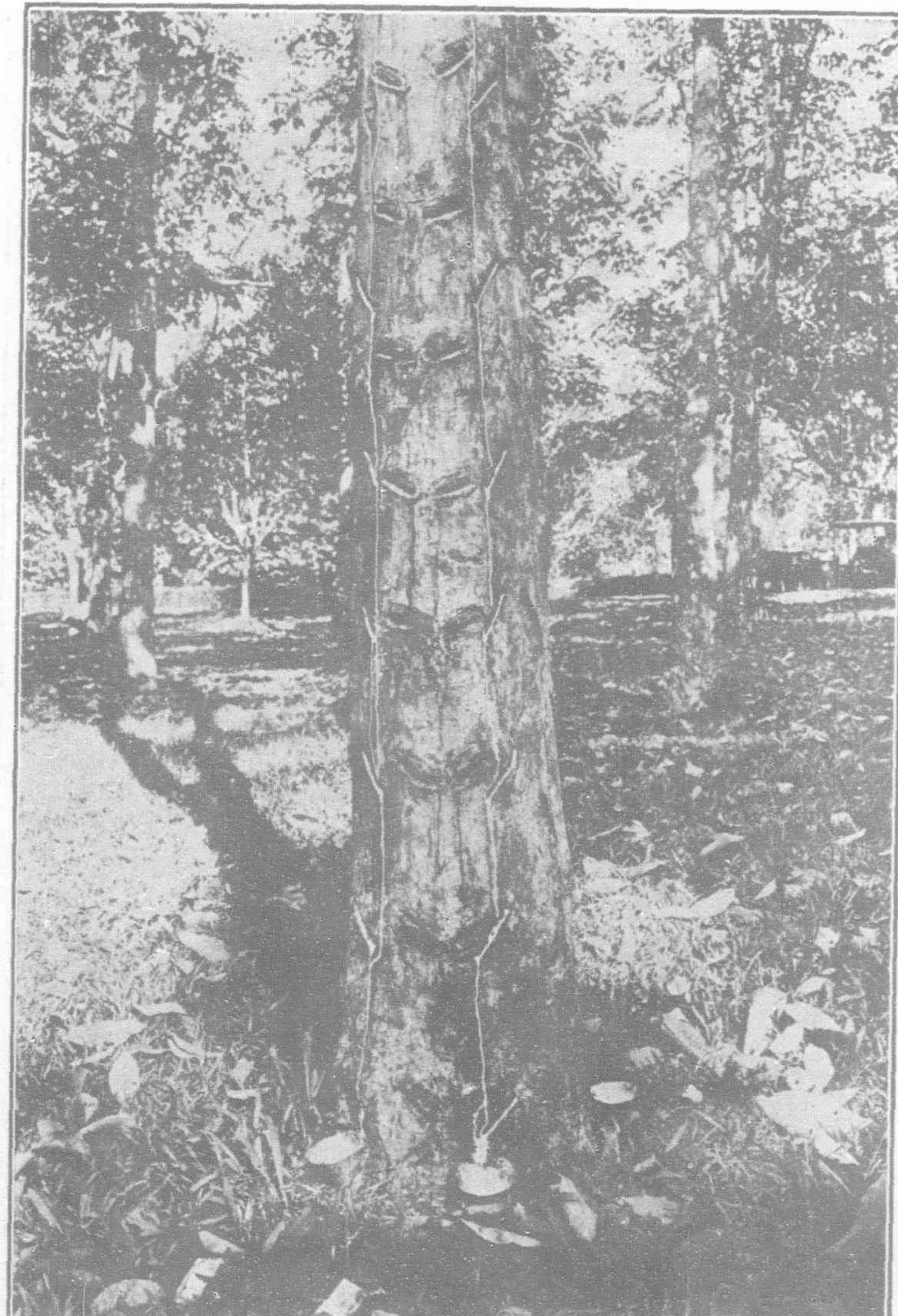
Philippine markets, as well as from different species of *gutta percha* trees, to show composition and comparisons.

Source of specimen.	Appearance.	Gutta. Per ct. 74.77	Resins. Per ct. 20.74	Water. Per ct. 2.49	Dirt. Per ct. 1.99	Grade.
1. Collected from <i>Pal</i> gutta trees in experimental garden, Buitenzorg, Java.	Close, compact, tough, whitish to pink and brown.	86.15	11.02	2.08	1.75	Superior, but not ongagapore market. Do.
2. Sample analysis of product of <i>Pal</i> gutta made by Van Romburg.	White, somewhat elastic, very tough. Somewhat tough, white, pinkish, and brown.	48.19	41.38	6.59	2.05	Superior in Philippines* First.
3. Product from two trees of <i>Pal</i> leeri, Tawi-Tawi	Clean, pinkish balls; tough.	38.42	49.08	9.76	2.72	Do.
4. Product from tree of <i>Pal</i> mindanaense; in mountains southeast of Cottabato.	Tough, compact slab, inclined to crumble; white to brownish.	28.37	37.42	18.32	15.83	Second.
5. Brought into Cottabato by Moros from Subano region, northwest of Tucuran.	Long coils on piece of bamboo; dirty and dark colored.	31.30	51.86	.04	16.79	Do.
6. Purchased from Moros at Bongao.	Dark brown, hard, and crumbing.	30.20	57.40	7.80	4.60	Do.
7. Product from tree of <i>Pal</i> celebicum; in mountains southeast of Cottabato.	Heavy, compact mass, crumbing easily; light reddish brown.	23.64	53.99	13.87	8.48	Third.
8. Brought into Cottabato by Moros from Binang region; botanical origin unknown.	24.55	43.21	14.19	17.04	Fourth.	
9. Product from unknown species; in mountains southeast of Cottabato.						
10. Product from <i>Pal</i> aherianum; in mountains north of Tucuran, Mindanao.						

* The grading of the Philippine *gutta percha* is done by the Chinese exporters.



A PIECE OF DRY BARK FROM A RUBBER VINE (PARAMERIA PHILIPPINENSIS RADLK.) BROKEN AND PULLED APART, SHOWING THE IMMENSE NUMBER OF RUBBER FIBERS PERMEATING THE INTERIOR OF THE BARK.



METHOD OF TAPPING A PARA RUBBER TREE. THIRD DAY AFTER TAPPING. EXPERIMENTAL GARDEN, BUITENZORG, JAVA.

DIRT.

A fair sample of the *gutta percha* to be analyzed was finely divided and quartered down to a small amount. Of this 0.3 to 0.5 gram was taken in a weighed thimble filter and extracted hot in a Soxhlet apparatus, chloroform being



A RUBBER VINE GROWING IN THE FOREST. TO SECURE A GOOD YIELD OF RUBBER THE VINE SHOULD BE PULLED DOWN, ALL THE BARK REMOVED AND TREATED FOR THE EXTRACTION OF THE RUBBER. WESTERN MINDORO.



A RUBBER VINE (PARAMERIA PHILIPPINENSIS RADLK.) GROWING IN THE FOREST. WESTERN MINDORO.

used as the solvent. When all was dissolved but the dirt the latter was dried on the filter and weighed.

RESINS AND GUTTA.

The chloroform solution is then evaporated to dryness in the flask (previously tared) attached to the extractor and dried to constant weight on the water bath in a stream of dry carbon dioxide gas. After weighing, the contents are extracted with hot alcohol or acetone, when the flask is again dried as before and weighed. The loss in weight equals the weight of resins and gain of the flask the weight of gutta. The water is estimated by difference.

Analyses of samples taken from several trees of one species show the percentages of the constituents to vary considerably, they being influenced, probably, by the age of the tree, the conditions of its growth (soil, moisture, shade, etc.), as well as by the season at which the sample was taken. For illustration of this, two analyses of gutta percha known to have been taken from different trees of *Palaquium gutta* are given to show the large variation in the percentage of gutta. It must, therefore, be understood that the figures obtained from the analyses of the gutta percha taken from any one tree will not necessarily represent the exact values for that species. An average from a number of trees is necessary to secure true values. In the same way, samples from any commercial grade of gutta percha may vary quite a little in their percentage composition, the differences, however, generally falling within a well-defined limit.

The "dirt" found in all commercial gutta percha, as has been stated, may be there unintentionally, or have been added with intent to defraud. In either case it generally consists of finely chopped bark, leaves, small sticks, etc. From 2 to 6 per cent of dirt is not only admissible but generally unavoidable, while more than that is looked upon with suspicion. So intimately is some of the dirt mixed with the gutta percha that even the best machines fail to eliminate the last one or two per cent.

A certain amount of coloring matter which exudes from the bark when it is cut is also mixed with the gutta percha milk and colors the resulting product. Certain species give a distinctive color to the material taken from them, so it has become a practice of the Chinese in Singapore to boil inferior grades with the bark of the best species in order to give them the correct color.

Under "resins" are considered the resinous-like substances which with gutta go to form the substance gutta percha. These resins vary greatly in appearance. In gutta percha from *Palaquium gutta* for example, as has already been stated, one is a white crystalline mass while the other a yellow amorphous powder. In other species they may be oily or brittle, colored or white. Judging from the formulas $C_{10}H_{16}O$ and $(C_{10}H_{16}O)_x$ which have been given to alban and fluavil respectively, it might be inferred that these resins are oxidation of products of gutta $(C_{10}H_{16})_x$. Sufficient work has not yet been done on these bodies, however, to make this anything more than conjecture.

Again taking the gutta percha from *Palaquium gutta*, for illustration, it is found that the 10 to 20 per cent of resins which it contains is not a detriment but rather a decided advantage. Besides adding much to the bulk, these substances are insoluble in water, poor conductors of electricity and quite stable against the action of air and moisture. In fact, gutta percha at present prepared for the insulation of submarine cables is composed of one part of resins to every two parts of gutta. When the amount of resin passes this percentage, however, the toughness of the gutta percha is lessened and other objectionable qualities become apparent. The necessity, then, of knowing the percentage of resin in a given quality of gutta percha before using it for manufacturing purposes is plainly apparent.

As might be inferred from the preceding, the "gutta" is the principal constituent in gutta percha. The methods of separating it from the other constituents have been given



PALAQUIUM LANCEOLATUM BLANCO. PROVINCE OF TAYABAS, LUZON.

and its indifference toward dilute acids and alkalies noted. Concentrated nitric acid causes violent oxidation while sulphuric acid carbonizes it in a short time. Alkalies, even when concentrated, have practically no action on it. The best solvents for gutta are chloroform, carbon bisulphide, and carbon tetrachloride. From all of these solutions it may be reprecipitated by the addition of alcohol.

If gutta be subjected to dry distillation isopren C_5H_8 and kautchin $C_{10}H_{16}$ (18) distill over as the chief decomposition products, and are identical with the isopren and kautchin (19) recovered from the dry distillation of rubber. Tilden (20) succeeded in changing isopren back again into a rubber-like substance through the action of concentrated hydrochloric acid. Isopren, according to Ipatiew and Wittorf (21), is methyl divinyl $CH_2=C(CH_3)-CH=CH_2$, so that both gutta and rubber will perhaps be found to be polymerization products of isopren.

The discussion has so far been of the gutta found in the species *Palaquium gutta*. Dr. Eugene Obach (22), as chemist for a large cable insulating company, made analyses of specimens of gutta percha from different species of trees as well as from many grades of commercial gutta percha. In his table of analyses he puts under the name of "gutta" the substance found in each sample, which was insoluble in boiling alcohol but soluble in chloroform. The "guttas" thus found were variously colored from white to dark brown, and possessed different tensile strength, from "elastic" and "very strong" to "brittle." Obach thus used certain slight chemical similarities as his criterion of a gutta and neglected, apparently, the wide physical differences, which, as will be shown later, these bodies display. Provided there are many

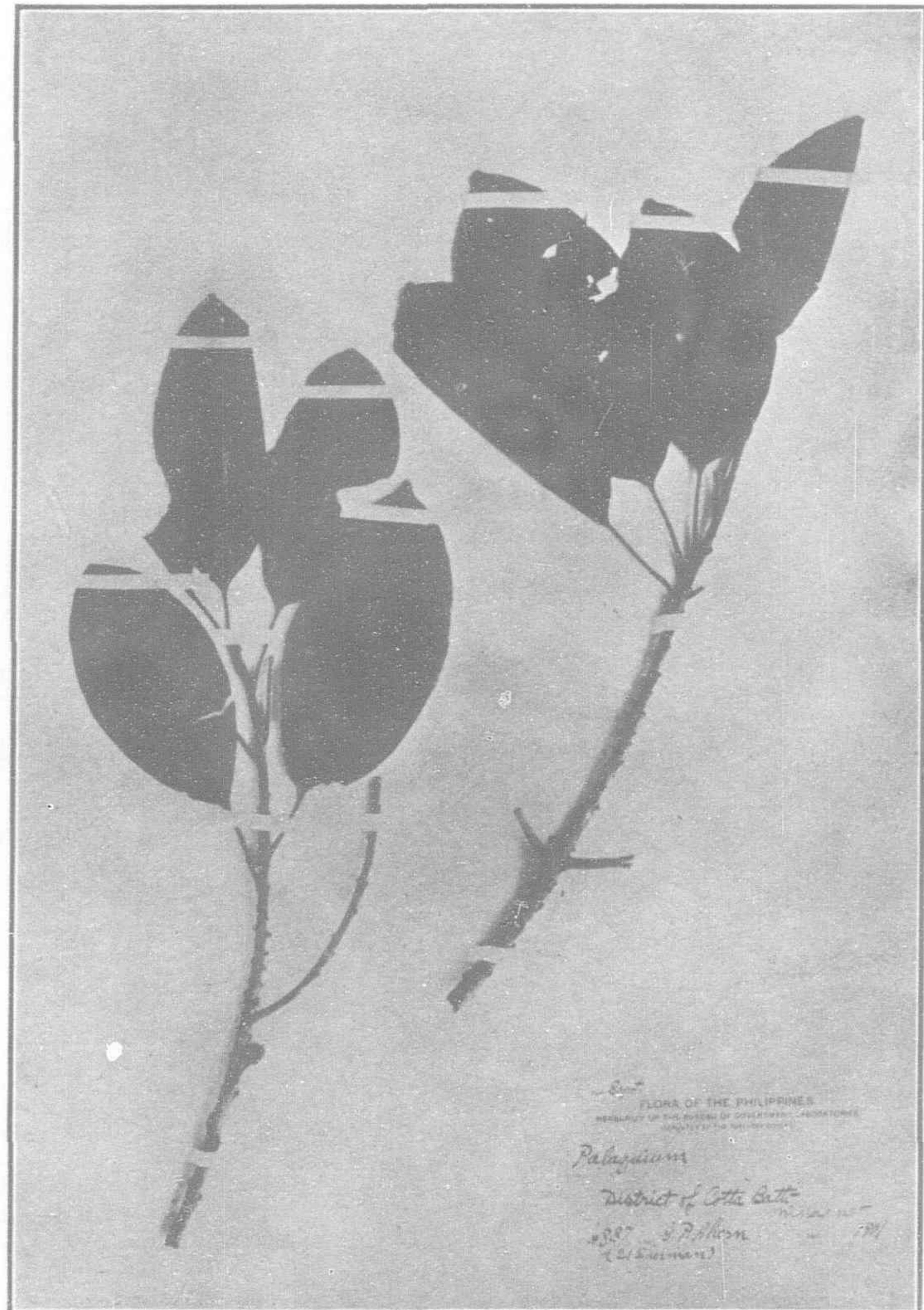
kinds of guttas, it is easily understood why a chemical analysis alone of a gutta percha will give almost no insight into its value unless accompanied by physical tests of the gutta contained in it.

VIII. PHYSICAL TESTS OF GUTTA.

Before going further with the discussion as to whether chemical or physical tests should decide what is or is not "gutta," attention is called to the various physical properties of these bodies. To provide material for these physical tests, they were isolated in considerable quantities from various representative Singapore and Philippine gutta perchas by means of solvents, and after evaporation were dried in a stream of dry carbondioxide gas to prevent any possible oxidation. When heated to the temperature of boiling water they could be easily cut or molded into the necessary shape for performing the following experiments:

Gutta	Color	Action toward light		Heat, softening temperature	Stress, tensile strength (pounds)
		Refractive index	Rotation in 0.5 per cent solution		
No. 1.	Light brown.	70° C	6.75	62	5262.4
No. 3.	Cream white.	1.5093	6.50	60	668.15
No. 4.	Yellowish white.....	1.5088	7.50	61	5134.7
No. 5.	Very light chocolate.	1.5089	6.50	61	6451.45
No. 10	Cream white.	1.5076	4.75	56	(1)

1 Brittle. (The numbers in this table refer to Table No. 2.)



PALAQUIUM MINDANAENSE MERRILL. DISTRICT OF COTTABATO, MINDANAO.

Explanation of Table.

The "color" of the guttas undoubtedly comes from the bark of the tree when cut to secure the gutta percha, for, by repeated solution and precipitation, the color may be almost entirely eliminated, leaving the gutta only slightly tinted from a cream color to light pink, and pure white when finely divided. It is my opinion that all variations of color are only incidental and not connected with the chemical structure of the gutta itself. The amount of color in the above samples was a minimum and not sufficient to have any material effect on the physical properties. The experiments with light, namely, those given under refractive index and rotation are employed with great success in the commercial analysis of sugars, oils, fats, butters, etc. This is due to the fact that each chemical individual, providing it is capable of transmitting light, has an index of refraction peculiar to itself, which, for purposes of comparison, must be taken under constant conditions and, provided it is able to rotate the plane of polarized light, a degree of rotation which is also constant. While two chemical individuals may show identity in some one physical property, they can not continue this identity in two or more, so that more than one method was necessary to determine the relationship of the guttas examined by me. Substitution, adulteration, or variation in chemical structure can in this way be easily discovered and determined. Owing to certain mechanical and chemical difficulties encountered in making these determinations on the guttas, the limits of error of experimentation are outside of the differences found between Nos. 1, 3, 4, and 5; but do not include the marked difference displayed by No. 10. In determining the refractive index, an Abbe-Zeiss refractometer was

employed, a small amount of a concentrated solution of pure gutta in chloroform placed on each of the prisms and allowed to stand until the odor of chloroform had entirely disappeared. The prisms were then closed, and kept at a temperature of 70° C. until the readings became constant, showing that all chloroform had evaporated. The above figures are the results of many determinations made with carefully prepared samples.

The rotation was determined in chloroform, 0.5 per cent solution being used, because, when more concentrated, the absorption of light was too great to admit of accurate readings.

The physical tests given in the above tables are so diversified as to bring out clearly the extent of resemblance between the various samples of gutta submitted to them. The results show little variation between Nos. 1, 3, 4, and 5. Indeed, these samples may be regarded as practically identical in composition. The physical constants appear to be those of a single chemical individual, the refractive index varies only in the third decimal place, the rotation is the same within the limits of only 1° , and the softening points vary only from 60° to 62° . The small amount of resins in the specimens, which it was impossible to remove, would be sufficient to account for even greater variations. No. 1, however, is the best sample, used for a standard and taken from *Dichopsis gutta*; Nos. 3, 4, and 5 are from the Philippine Islands. It would appear from this that gutta is a chemical individual, identical in all cases, and any substance, such as No. 10, for example, which varies from the properties recorded above, should not be designated as such. This opinion is, however, advanced, subject to further confirmation by extended chemical

investigation looking toward the determination of the chemical constitution of gutta. In the case of sample No. 10 the substance designated as gutta, and the real gutta of No. 3 are very similar in appearance and chemical behavior. In tensile strength, however, they are widely divergent, and this difference is accentuated and not lessened by the other physical tests, for while these latter differences are not so marked, yet they clearly show that all the physical constants of No. 10 differ more or less from all the others, and hence this substance must certainly be different in chemical constitution.

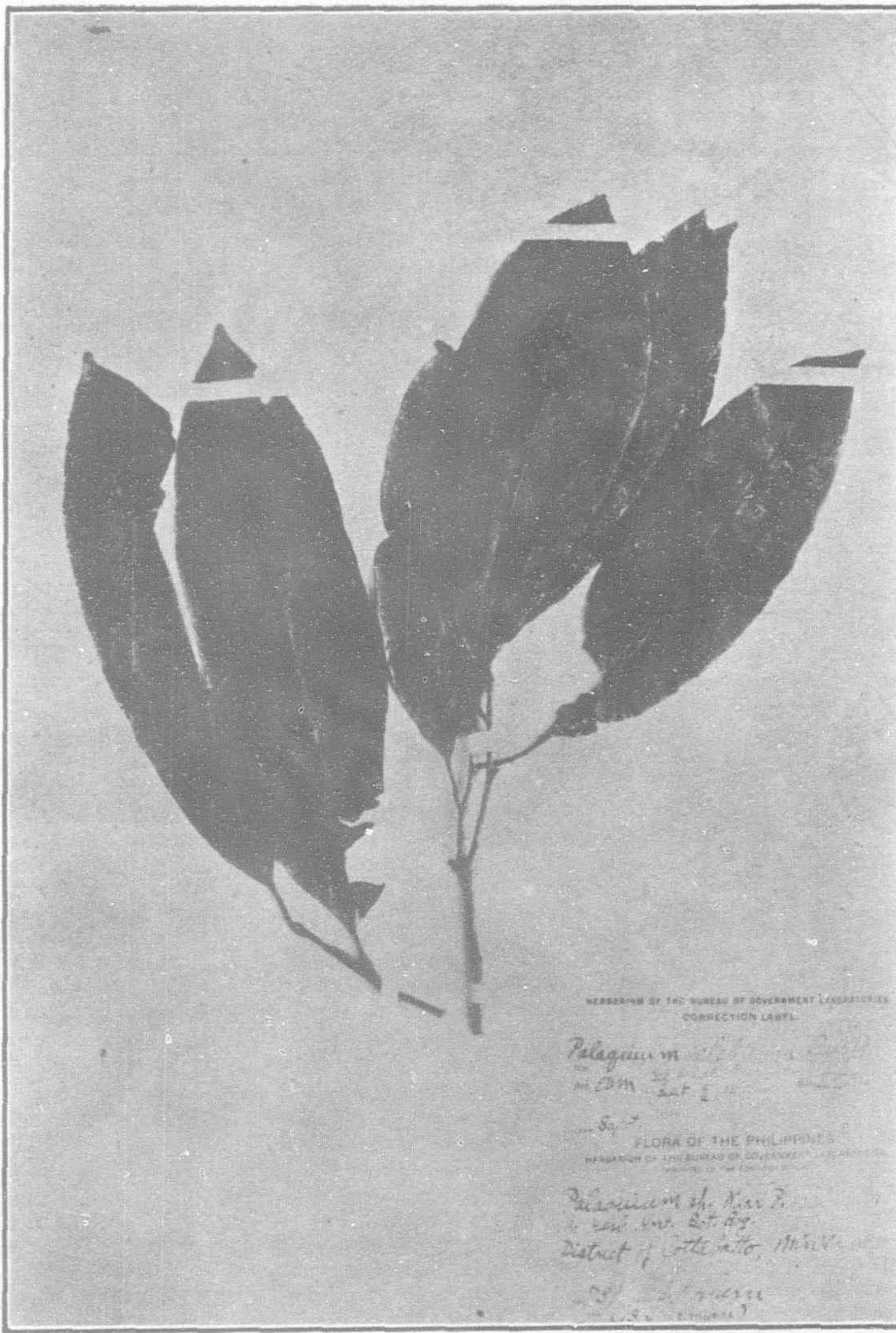
The action of heat in softening gutta percha and making it plastic has previously been used as a test of value. It has been found that the best grades require a higher temperature to soften them than the lower grades. According to the results obtained by me, the inferior grade of gutta (No. 10) also possesses the property of softening at a lower temperature than the superior gutta. The softening point was determined by molding a piece of gutta into the bottom of a glass tube sealed below, placing a sharp-pointed glass rod in contact with the surface, and gradually heating in a bath of sulphuric acid until the point of the glass rod just began to enter the gutta.

The tensile strength, or toughness, possessed by gutta, next to its resistance to sea water is undoubtedly its greatest merit commercially. Even the inferior grades of gutta percha are used for objects requiring toughness combined with pliability and strength. In the insulation of a submarine cable great toughness is imperative, for during the laying of the cable it is constantly subjected to great strains from

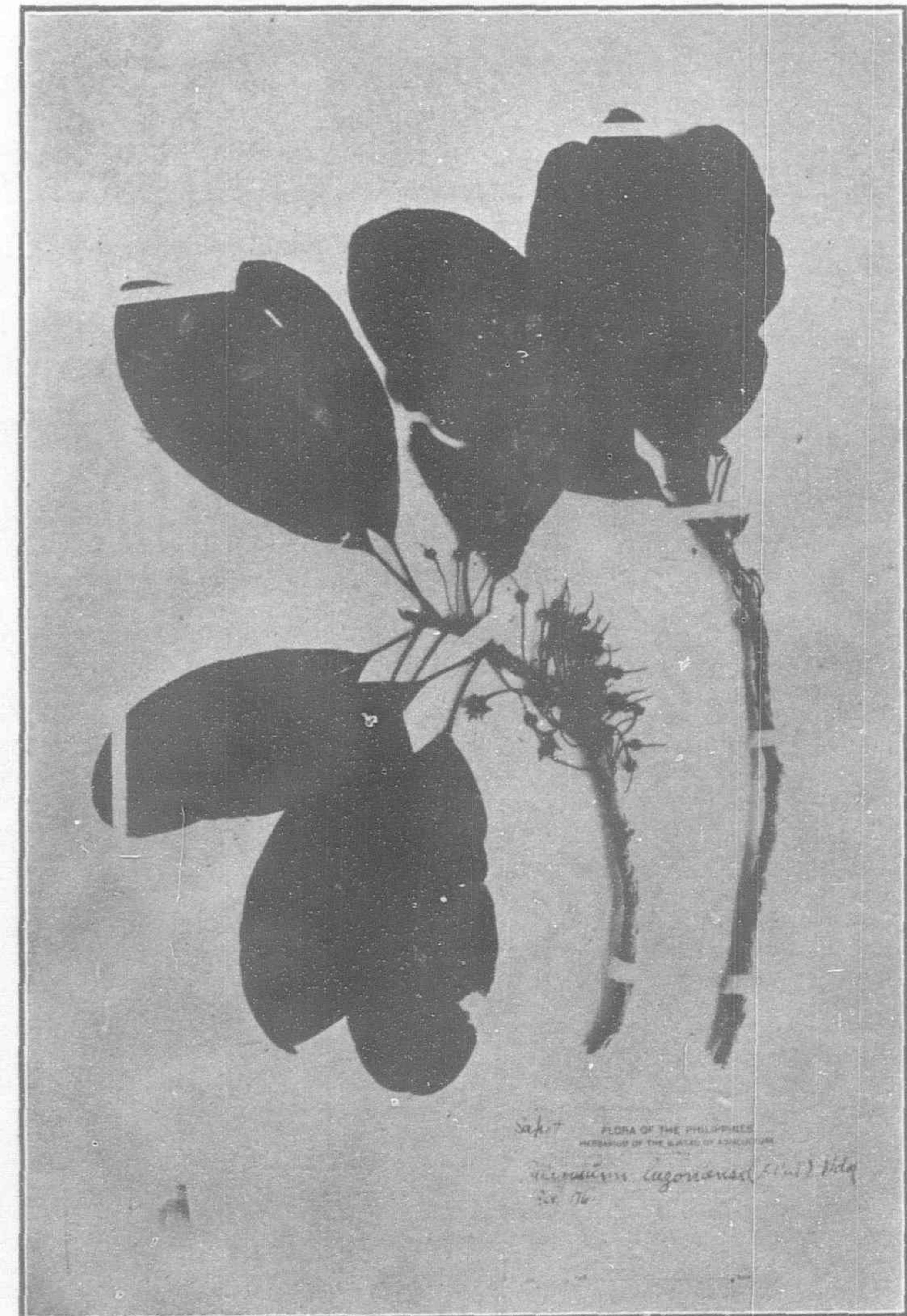
kinking, pulling, rubbing, etc., and when it has reached to the ocean bottom where the pressure is often three and a half tons to the square inch, it must not have sustained a fracture even as large as the diameter of a fine hair, for otherwise the moisture would slowly penetrate to the wires, the insulation would not be complete, and the cable would have to be pulled up and repaired.

In order that the measurements made might be within the limits of the instruments at hand, only small strands of gutta could be used for testing. To make these strands free from minute air bubbles was well nigh impossible, in consequence of which the breaking was in most cases brought about by weakness due to this source. The figures, while thus only approximate, are below and not above the true values and show clearly the enormous tensile strength of my samples. Obach (23) gives a tensile strength of 5,000 pounds for the best gutta percha while for the gutta from it he found about 6,500, which closely corresponds to results given above. This also brings out most clearly the excellent quality of the best Philippine gutta percha.

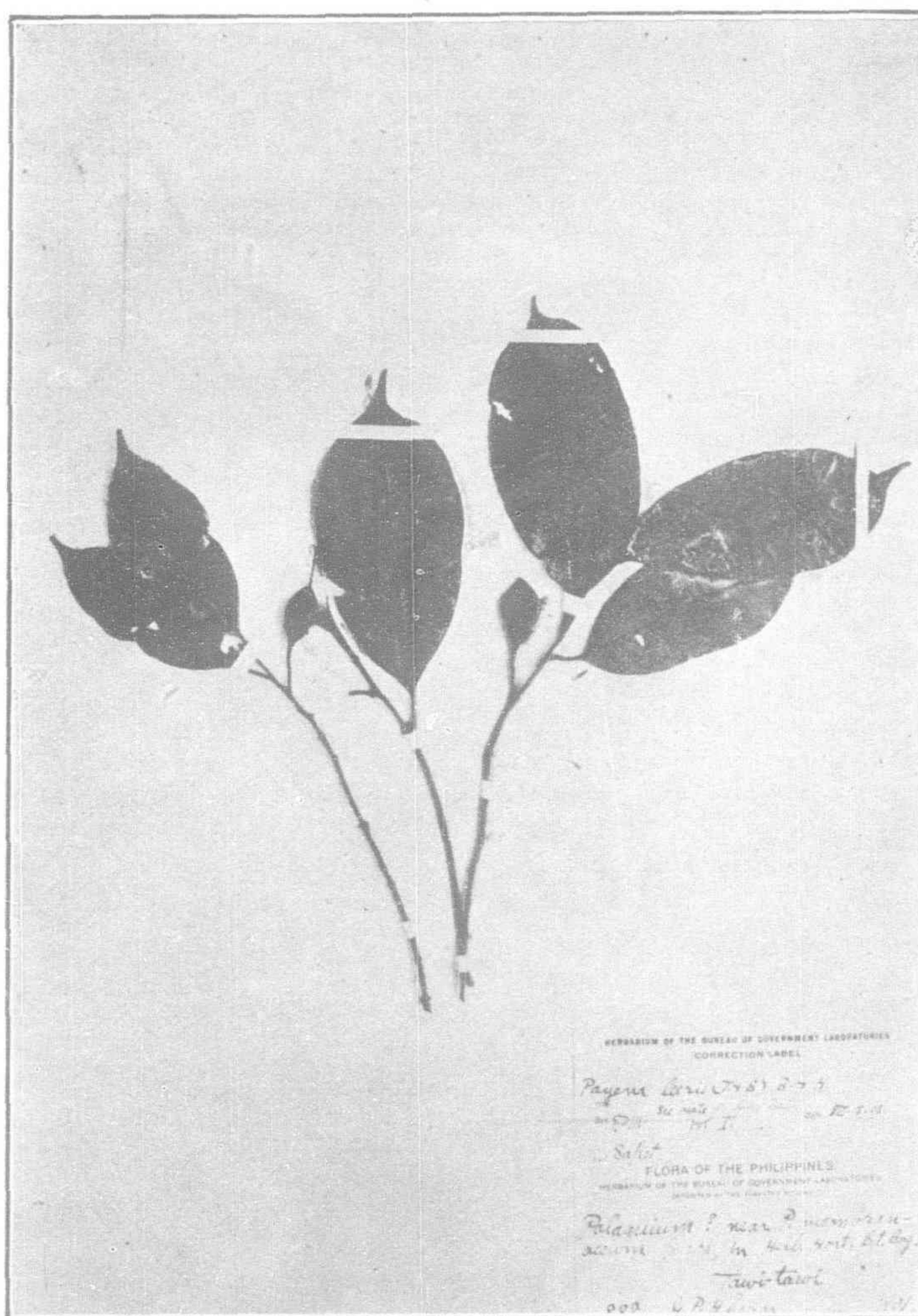
The results of the combined chemical and physical tests on various samples of so-called "guttas" extracted from gutta perchas of different origin seem to show that the gutta from the gutta percha of *Palauium gutta* has certain well-defined chemical and physical properties, and they also demonstrate that some so-called gutta perchas contain a substance which chemically resembles to a certain extent the above-mentioned guttas, but differs widely from it in many of its physical properties. As the gutta from the species *Palauium gutta* has stood the test of usage for



PALAUIM CELEBICUM BURCK. DISTRICT OF COTTABATO, MINDANAO.



PALAUIM LUZONIENSE (F. VILL.) VIDAL. PROVINCE OF TAYABAS, LUZON.



PAYENA LEERII (T. ET B.) BENTH. ET HOOK. TAWI-TAWI.

fifty years, it is only fair that its chemical and physical constants should be used as the standard of comparison. Until more is known chemically of such substances as I found in No. 10, a chemical analysis will not be sufficient to determine the value of a gutta percha, but it must be supplemented by physical tests. This laboratory will undertake the task of so determining the chemical properties of gutta and its allied bodies in the hope of discovering a method of chemical analysis which alone can be used to determine the value of any gutta percha.

XI. SCIENTIFIC PROPAGATION.

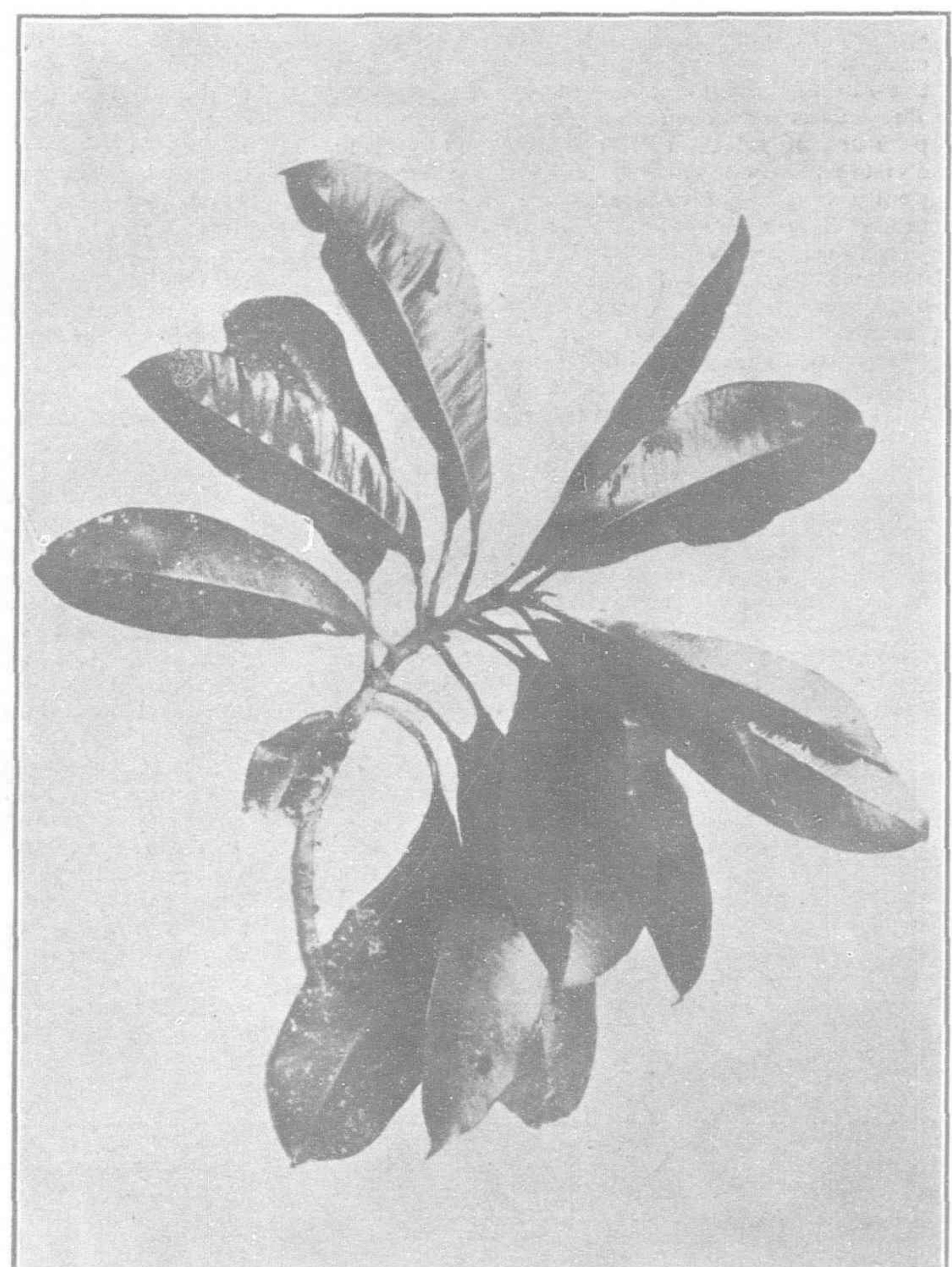
As soon as the native collectors made such heavy inroads on gutta percha forests as to make certain of their serious decimation if not entire destruction, the various governments having tropical possessions in the East began to take note and make inquiries, but it was not until the last four or five years that the notes became serious or the inquiries anxious. Both explorations and inquiries revealed that the greater part of the Malay Peninsula had lost most of its trees, and that the portions of Sumatra and Borneo which were still productive were in the most inaccessible mountain forests of the interior. So thoroughly had the seed-bearing trees been cleared out of the Malay States that a standing reward by government officials for seeds of the species *Palauium gutta* was not claimed, though the offer stood for a long time. Van Romburgh (24) in a very extensive tour of Sumatra and Borneo, made for the purpose of reporting to the Dutch Government the condition of the gutta percha regions, saw but a few seed-bearing trees, and these in almost all cases had been protected by native chiefs.

In the botanical gardens of Singapore, Bukit, Tiniah, Penang, and Buitenzorg, *Palauium*

gutta trees were growing which had either been protected from destruction or had been planted for a sufficient length of time to be seed-bearing. These formed the nucleus of the gutta percha nurseries now being planted by the English and Dutch governments, with the purpose of obtaining reliable information as to methods of propagation, the rapidity of growth, the time necessary for maturing, and above all to furnish material for testing scientific methods for extracting gutta percha without killing the trees. Owing to the scarcity of seeds everywhere the government botanists were obliged to resort to various methods for securing young plants, and their experiments have been along the following lines:

(a) *Planting from Seeds.*

The fresh seeds are laid in beds of rich earth and allowed to germinate and grow under partial shade. When about a foot high they are transplanted to the future plantation, where the soil may be entirely free from trees, shrubs, or other vegetation (Dutch method) or where small patches of earth have been cleaned and loosened for their reception in a forest of secondary growth, heavy enough only to furnish a light shade (English method). By the Dutch method a light shade is required around each seedling until a vigorous growth is secured. The seedlings are set out about 5 by 5 yards apart, though where it is desired to obtain the largest amount of leaves per acre the space allotted is 4 by 4 yards. No special care seems necessary except to keep them free from weeds. Too much stress, however, can not be laid on the care which should be taken not to break or injure the long tap root of the young plant during the process of transplanting, for any injury to it stunts the growth materially or even causes death. Mr. Curtis, director of the Penang Botanical Gardens, has modified the manner of



LEAVES OF PALAUIUM GUTTA BURCK, GROWN AT THE BOTANICAL GARDEN AT SINGAPORE, STRAITS SETTLEMENTS. FURNISHES FIRST GRADE GUTTA PERCHA.

starting the germination and first growth, by placing each seed in a separate bamboo joint filled with earth. This joint is made long enough to allow the tap root to strike downwards undisturbed, and when the time comes for transplanting it can be transferred, joint and all, without any fear of injury, to the place made ready for it. The bamboo is then cracked open and the plant inserted in the ground with almost no disturbance of its roots.

The Dutch Government in Java, having many seed-bearing trees, is now deeply engaged in carrying out a programme which contemplates the planting of some 150,000 seeds annually until at least 1,000,000 trees are growing. This will be done on extensive government plantations at Tjipitir, Java. The entire management is intrusted to Dr. van Romburgh, director of the Government Chemical Laboratory at Buitenzorg, who has a corps of assistants intrusted with testing the gutta percha contained in the seed-producing trees in order that none but the best stock may be used.

(b) *Planting from Self-sown Seedlings.*

In the forests both of Sumatra and Borneo the natives are still able to find comparatively large numbers of self-sown seedlings of the *Palauium gutta* species. These, when carefully taken up and transplanted into air-tight boxes provided with glass covers and rich earth, can be packed in large numbers in a comparatively small space and shipped to almost any desired distance. For instance, 60,000 such seedlings were shipped two years ago from Southern Borneo to the French Congo, via Antwerp. The plants transported from Borneo to Singapore in this manner are doing well in the gardens at the latter place. The German Government is planning a nursery of such seedlings in its tropical possessions in New Guinea.



PALAQUIUM GIGANTIFOLIUM MERRILL. PROVINCE OF TAYABAS, LUZON.

(c) Propagation by Means of Marcottage.

As neither direct slipping nor grafting has ever succeeded with gutta percha trees, the method called marcottage was tried in Java and the Malay States with some success. This consists in selecting a young straight limb from a large tree and at the point where the roots are to grow the bark is removed for the length of an inch around the entire limb. The denuded spot is then packed with rich mud, which is held in by a coating of cocoanut or other fiber. If the mud is kept moist, and only if this is the case can good results be secured, small roots will generally appear in three to nine months, when the limb can be cut off and planted.

The principal gutta percha plantations now under cultivation and in which much useful and desired experimenting is being done, are located at Tjipitir and Buitenzorg in Java, on Rhio Island at Singapore, and Bukit Timah on Singapore Island, on Penang Island, and at one or two places in the Federated Malay States. Enough time and work have been spent to demonstrate most conclusively that gutta percha trees can be raised not only successfully but also without much trouble or great outlay of money, and all the nations having tropical possessions in the East, except the United States, have made a start toward gutta percha plantations, but the Dutch are the only ones so far who have gone into it on a grand scale, and unless appearances are deceitful they will have a monopoly on the plantations of the gutta percha of the future, as sure as they have on the forest gutta percha of the present day.

X. SCIENTIFIC METHODS OF COLLECTING.

Modern methods of collecting gutta percha have advanced along two lines. Needless to say they were not proposed nor carried out by the

wild native collectors who are unwilling to discontinue present gains in favor of future returns. It was previously remarked that the gutta percha is all contained in the bark of the tree and in the leaves. The problem resolved itself into either—

(a) Extracting some of the gutta percha from the bark and leaves without injuring the tree, or

(b) Felling the tree and securing the gutta percha from all of the bark and leaves.

To carry out the first proposition a method was devised similar to that used in South America for extracting rubber milk, by which incisions were made in the bark in a slanting direction up and down the trunk, so cut that the gutta percha ducts were opened but no injury done to the inside wood of the tree. The milk flowed out to a greater or less extent, and coagulated in strings on the bark. After the flow had ceased and complete coagulation had set in (one day) the strings of gutta percha were pulled off by hand, washed in hot water, and pressed into cakes. The advantage of this method was that no injury was done the tree although it was tapped repeatedly. The disadvantage lay in the fact that only a small per cent of the total gutta percha in the tree could be extracted at any one time. According to Van Romburgh's (25) latest experiments with plantation trees (*Palauquium gutta*) about 15 to 17 years old, the yield was 100 grams (nearly one-fifth of a pound) per tree. The gutta percha thus secured was of the very best.

In addition to the amount thus taken the leaves both from the living and dead trees contain 8 to 10 per cent by weight of gutta percha calculated to the dry leaf. To extract this gutta percha two processes have been devised:

(1) The mechanical one, in which the leaf is ground to a powder and then treated with hot water in such a way that the gutta percha is gradually worked into a compact mass while

the pulp of the leaf is washed away. Up to the present the process has not been perfected, for although the gutta percha contained is of a good quality the percentage of recovery is smaller than it should be. The largest factory of this kind is being erected near Singapore and it proposes to use the leaves from a plantation of 100,000 trees on the Island of Rhio, some five hours from Singapore.

(2) The chemical process is carried out on the same lines as the mechanical one so far as the grinding of the leaves is concerned. The powder is then extracted with solvents and the dissolved gutta percha recovered either through precipitation or through evaporation of the solvent. The details of the process, as well as the solvents used, are kept secret and no patents for this or the mechanical process have been taken out.

The largest factory producing gutta percha for the market is located at Sarawak, North Borneo, and is very advantageously situated as regards securing leaves from the surrounding gutta percha forests. It has been claimed, however, that the factory defeated its avowed object of preventing the destruction of the trees, for the native collectors employed would never risk their lives trying to collect leaves from forest trees over 100 feet high when they could gather them much easier by felling the tree and collecting a goodly amount of gutta percha in addition. It thus appears that the supply of leaves must come from a plantation where supervision can be exercised.

The plan of felling the gutta percha trees of the forest and securing all of the material from the bark and leaves is worthy of serious consideration. In the first place the trees are surely doomed as long as present conditions obtain. If the native can sell the entire bark and leaves for more than he could get for the gutta percha which he could extract, he will be tempted to bring them in. A second inducement for this method is the fact that many gutta percha trees cut down even years previously have still much perfectly sound gutta percha in the rotting bark, which could also be secured. The process of recovering the substance from the bark is practically the same as from the leaves, and about the same per cent is found there as well. With a yield of from ten to fifteen times the present amount recovered from each tree the gutta percha market would be relieved at once and the extermination of the trees put off many years, long enough at any rate to allow plantation trees to take their place.

A large amount of work has been done in this laboratory with the purpose of finding a practical method for extracting the gutta percha from the bark and leaves of the gutta percha trees. The process calls for a solvent for the gutta percha which will dissolve it easily, can be recovered and again used, and above all has no deleterious effects on the substance.

The result of the experimentation led to a modification of the Obach (26) hardening method for gutta percha. The process consists in extracting the gutta percha bark and leaves by means of hot gasoline, the apparatus being provided with reflux condensers. When the gutta percha has entirely dissolved the solution is allowed to stand until all of the dirt and most of the coloring matter has settled. The clear supernatant liquid is then poured off and cooled to 10° or 15° below freezing. The gutta, with a small amount of resin, is thereby precipitated and can be filtered off through cloth bags and dried. The resulting gutta can be further purified by redissolving in distilled gasoline and reprecipitating. The filtrate containing the dissolved resins is redistilled and the recovered gasoline used for effecting further solution of gutta percha, thus making the process continuous.

The gutta so secured, on being warmed, can be pressed into any desired form for experimentation. The gutta used in the above experiments was so prepared, and the results of the physical and chemical tests showed it to be unaffected by the process to any appreciable extent. A year's exposure to laboratory fumes has not changed the substance in any way.

(Continued on page 37.)

MINING REVIEW

MINING IN KOREA.

By MR. L. J. SPEAK.

Korea is not open to foreigners for mining, with the exception that one subject of each of the great powers may secure one concession. Until recently, only the Americans, British, Germans, and Japanese had located their concessions. The principal terms on which they are granted are that mining supplies may be imported free, and that the Emperor shall receive twenty-five per cent of the profits. The American Company compounded for this tax by a fixed payment of about £2,500 per annum. With this precedent others will be able to claim the same terms. The American concession, situated in the Northwestern part of Korea, near the Manchurian frontier, has an area of 400 to 500 square miles, and is the only one that has arrived at the producing stage.

Its financial history is unique. Starting about five years ago with ten light stamps, it has developed and equipped itself with 200 stamps, capable of crushing 600 tons of ore per diem without the addition of further capital. At first the only practicable route to the mines was via Seoul, a distance of 250 miles. Later a route was opened by water transport to Peng Yeng, and from thence about 120 miles by land. At present, by a well-organized service of schooners and flat-bottomed boats operating during the period of summer rains, the company is able to land most of its goods direct onto the concession, within thirty miles of all its mines.

The principal mines now being worked are:—

Group A.....	{ Chittabalgie.....	20 stamps.
	{ Maibong.....	40 "
Group B.....	Kuk San Dong.	20 "
Group C.....	{ Tabowie.....	40 "

Group C.....

Taracol..... 80 "

In addition, there are several mines where prospecting or development is going on, and there are also several mines let on tribute to the natives.

The three groups are about twenty miles apart, and each has its own superintendent. All the mines are quartz ledges in granite. The mills are provided with true vanners, but have no cyanide plant for the tailings. In the case of one mine, the concentrates, which are very rich, are shipped to America, but as a rule they are cyanided on the spot.

GENERAL CONDITIONS.

Water is plentiful, except for a short period during the height of the winter. Lumber, mining timbers and cordwood, though not too plentiful, are cheap, owing to the cheap labor. Steps are now being taken to develop a water power scheme in order to avoid the use of wood fuel and preserve the timber. Labor is generally plentiful, but considerable difficulty is met with in obtaining suitable white foremen and overseers. These are mostly obtained from the Western States under contract, and, as in similar cases all over the world, where personal selection is not possible, are not always satisfactory. Japanese are largely employed as carpenters, blacksmiths, and engineers, and many of them are excellent workmen. Their wages average two dollars per day, but a few get more. Chinese are largely employed as surface coolies in the mills and cyanide works, and to a limited extent underground. They are preferable to Koreans for such employment, as they work more regularly, and require less supervision. They are also indirectly useful in preventing labor troubles and checking thieving, as they do not mix with the Koreans. The ordinary wages of a Chinaman is 80 cents per day. Koreans are employed for the rest of the work; their carpenters are expert adzemen, and as miners and tool sharpeners become very efficient. At a recent drilling contest, the winning double-handed team, using $\frac{7}{8}$ " steel drills, sharpened in the ordinary way, finished a 22-inch hole in a granite boulder in ten minutes.

KOREAN COOLIE LABOR.

The pay of an ordinary Korean coolie is 50 to 60 cents per day, and of a miner or carpenter, one dollar twenty to one dollar fifty cents per day. No food or lodging is provided for any of the Oriental workmen. Koreans run most of the hoisting engines, and no serious accidents have occurred. After allowance is made for the difficulties of language, it must be said that these Japanese, Manchurians, and Koreans are as intelligent and as capable of receiving instructions as the average European laborer. Their religious and moral ideas are somewhat different to ours, but they are amenable to common sense. A Korean is not so conservative as a Chinaman.

The main principle on which this labor is managed is to have all natives working under the supervision of white men without any intermediate native foremen. With proper organization the number of laborers a white man can look after is mainly determined by the extent of ground they are spread over. At the Tabowie mine, for example, eight levels are open, and one white overseer is required to look after four levels. The overseer examines every hole drilled, to see if it is of proper depth and correctly placed, and suitable for a charge of one-fifth of a pound of dynamite. He also keeps careful tally of steel and tools in use, and of candles. After a short experience the overseer finds he can do this without much trouble, and can very quickly detect delinquents. Most of the overseer's time is occupied in superintending the timbering, and the tramping of the ore.

THE TABOWIE MINE.

The following is the actual crew employed in the Tabowie mine during May, 1902:

Europeans.	1 Foreman.
	4 Overseers.
Asiatics.	2 Timekeepers—one Korean and one Japanese.
	3 Korean engineers (hoist).
	2 Korean engineers (pumps).
	2 -- firemen.
100	12 -- carpenters and timbermen.
10	100 -- miners.
	10 -- tool sharpeners and helpers.
	48 -- shovellers, carmen, station men, etc.
	13 -- toolboys, etc.

altogether, five Europeans and 192 natives,

In addition to the above there is the frequent help of a gang of eight surface coolies, and some work done in the general workshops. During the month the above crew extracted 2,904 tons of ore, and put in 366 ft. of drifts, crosscuts, and rises. The ground is not hard, but it requires dynamite, and timbering throughout. The stopes vary from 4 to 15 ft., averaging, perhaps, during May, about 8 ft.; all stopes are timbered, square sets being used in the large stopes.

The occurrence of the ore-chutes is somewhat complicated, and not conducive to cheap mining or systematic stoping throughout. The bulk of the ore during this month was hoisted from the shaft.

The principal stores consumed were:—

1,100 lbs of dynamite.
5,500 detonators.
12,000 ft. of fuse.
50 boxes of candles.
400 lbs of drill steel,
590 mine timbers.
8,960 ft. of planks and lagging.
48 cords of wood.

EXPENDITURE.

The total expenses were as follows:—

Europeans	£130
Native wages	270
Stores, shops, coolie gang, etc.	240
	£640

equal to \$3.00 per ton mined on 2,904 tons.

Similarly in June, with 3,220 tons of ore mined, the total cost equalled \$2.50 per ton, and in July, with 3,350 tons, \$2.25 per ton.

These costs include all maintenance and construction expenses during the period, and also an amount of development work exceeding the stoping requirements. They include assaying costs, but not surveying, nor general management expenses. The stores are, however, charged to the mine at a slight profit, and the actual wages (native) paid was about £30 per month less than stated above, owing to the low price of silver. The discount on silver is credited to the general expenses.

It will be noticed how rapidly the costs diminish with increased tonnage. It is largely on this account that during the period under review the cost of mining in other places on the concession averaged \$2.50 to \$3.00 per ton. The different mines also vary much in working facilities and in hardness of rock; and where the rock is hard, less timber is required, which nearly compensates matters.

On the whole, mining costs in Korea may be roughly estimated thus: With a stoping width of not less than 4 ft., and where there is not an excessive amount of dead work, the total cost of mining will be from two dollars to two dollars fifty cents per ton. This would cover all ordinary costs, exclusive of new machinery.

In milling and concentrating, recent costs have been as follows:—

Tabowie Mill—Forty stamps with vanners and canvas plant—

	Tons milled.	Cost per ton.
May, 1902	4,008	\$0.80
June "	4,130	0.75
July "	4,589	0.70

This mill is run by steam power, wood being used as fuel. The screens used during May and June were equal to 35 mesh, and during July, 30 mesh. The mill is not new, and the costs include all maintenance and repairs of both mill and vanners, as well as assaying and bullion smelting costs. For a mill and plant of forty stamps, a fair average cost of working would be about one dollar to one dollar thirty cents per ton, according to the price of fuel and situation. In the mills the Chinese become very efficient, as they are usually experts at sign language. White men must, however, invariably be present.

The work accomplished with this class of labor in Korea shows what may be expected or hoped for with regard to future mining in temperate zones of the Far East.

TEMBELING MINING

The Perak French Mining Company's prospectors in the Tembeling have made an important discovery in the vicinity of Kuala Sat. They are prospecting for tin, and the results so far are, it is said, most encouraging. The Tembeling valley is known to contain tin, and used also to be worked for gold by Chinese in the olden days. It is easiest reached from Lipis, going down the Jelai river; half a day's rowing with the stream brings you to Kuala Tembeling, and after that it is upriver poling. By way of the Tembeling is the best known overland route to the "Ulus" of Trengganu and Dungun; beyond a certain point, however, the river is full of rapids, no less than thirty of which have to be negotiated, some of them formidable ones.—*Straits Times*.

MINING, KASHMIR, INDIA.—A project for the exploitation of the mineral wealth of Kashmir is taking shape in the "Kashmir Mineral Co., Ltd." Gold, copper, and silver have been found in payable quantities, and the prospectus of the new company is certainly promising. The prospects of successfully working the mineral prospects of Kashmir are bright. Mr. C. M. P. Wright, the mining engineer engaged by the Syndicate, is at present in Calcutta.

COAL OUTPUT, KYUSHU, JAPAN.—The daily output of coal in Kyushu has hitherto amounted to some 1,300 carriage-loads, but since August 24 this amount has been reduced to 900 or 1,000. This is, of course, due to the recent *bon* festival, when the miners usually take a holiday. But as the coal stocks at Moji and Wakamatsu, the two outlets for the Kyushu coal, now stand at no less than 480,000 tons, with no prospect of a ready market, it is feared that the colliery owners will have to limit their output, which may thus be reduced by at least 20 per cent, compared with the normal figures.

RICH TIN FIELDS

Perhaps nowhere in the Federated Malay States, says the *Times of Malaya*, is there such a splendid opportunity for commercial enterprise as in those little known districts lying in the neighborhood of Grit. Though not more than fifty and odd miles from Penang, though accessible only from Kuala Kangsar, it is one of the most undeveloped mining districts in Perak. The Government are curiously apathetic in the matter, and, though frequently petitioned to improve roads and sanitary arrangements, they will spend nothing to open up the land. And yet the district has immense possibilities; according to one correspondent, it literally bulges with tin.

GOLD MINING, JAPAN.—A rich vein of gold is reported to have been discovered in Iwate prefecture. Senge district, in Iwate prefecture, has long been known as being rich in minerals, but hitherto very little gold has been worked. Charters have been obtained for the purpose of making trial diggings, and some of these have been found to promise well. Recently the Government sent experts to inspect the diggings, and as a result a large vein of gold was discovered. Consequently the district has now been declared by the Finance Department to be reserved as a mining exploration zone. As a result of investigations made up to the present, the extent of the vein and the quality of the gold produced are stated to be unrivalled in the country. If the expectations formed are justified, the Senge district of Iwate prefecture is likely to become the largest gold-producing district in Japan.

JAPAN GOLD FIELDS.—An extensive gold-field, says the *Chugai Shogyo*, has been discovered in Kesen district, Rikuzen province. According to investigations made by specialists, the total area of the field covers over 1,000 *cho*, and it is estimated that 20 to 30 million *yen* worth of gold per annum will be the output. With the exception of the few private claims already recognized, the Government has reserved the whole area to itself, with the intention of working the mine under the direct control of the Finance Department.

THE YENTAI COAL MINES

Now that the Yentai coal mines, to the north-east of Liaoyang, have been occupied by the Japanese, a Tokio expert, Mr. Hosoi, and several engineers, will be sent there in order to make an inspection. In this connection the *Jiji* says that the Eastern Railway has hitherto been using coal first from Yentai, secondly Fushun, and thirdly Kaiping as well as Japanese coal, in addition to wood as an auxiliary fuel. Early in May last, the Japanese, however, cut the railway connecting with the coal dépôt in Liaotung; subsequently by the occupation of Inkao the importation of Kaiping coal was suspended. Moreover, on Sept. 11th the Japanese captured the large Yentai Colliery near Liaoyang. Thus the Fushun coal mine alone is left as a source of fuel for the Russians, but it is expected to be also taken by the Japanese shortly. The Fushun mine is located about 18 or 19 miles south-east of Mukden. In case of Fushun being occupied by the Japanese the Russians will be obliged to rely on various mountains in Kirin Province, and railway traffic must be greatly affected.

RAUB MINES

PROGRESS REPORT.

The following is the Raub General Manager's

report for the month ending on 13th August, 1904:

The mine measurements and assay results of prospecting work, prepared by the mine manager, show a total of 202ft. for the period (4 weeks) under review, made up of 85ft. driving and 117ft. crosscutting, as against a total of 280ft. for the previous four weeks.

MINES.

New Main Shaft.—The erection of the headgear is being proceeded with, and other work incidental to erection of machinery is in hand. But sinking will not be resumed until we can apply electricity exclusively. We shall then no longer be subject to the ill-considered and impracticable conditions imposed by the new Boiler Enactment.

Bukit Koman 340 Level North.—This has been extended 12ft., bringing the total to 303ft. The lode averages 132in., but assays only 2½dwt. Instead of narrowing, as we expected, there has been a drop in value.

Bukit Koman, 340 Level South.—Here 8ft. has been driven, making a total of 340ft. The lode is 37in. wide and assays 2dwt. The changeable character of our lodes has been strongly evidenced here during the past month.

240 Level North.—The end has been advanced to 707ft. north of the shaft, making 13ft. for the month. No further bodies or indications have been met with, and the work has been stopped. The drive on the lode has been extended 12ft., making the total length 16ft.; for 43in. wide the lode assays 1dwt. per ton.

240 Level North.—Drive on Hanging Wall branch in stope work is being carried on here when convenient. During the month 9ft. has been driven, bringing the total to 25ft. The lode is 90in. wide, but very low grade.

240 Level North.—No 1 Winze North—Drives off crosscut. These drives have been further advanced 14ft., making the total 43ft. The lode averages 36in., and assays 4dwt. In the north end it has pinched out, and work is now being carried on the south drive only.

240 Level South, on Hanging Wall Branch. This end has been driven 9ft., bringing the total to 84ft. The lode is 31in. wide and averages 7dwt.

140 Level North.—Crosscut East (No. 1)—The crosscut has been extended 5ft. (to 64ft.) without any fresh discovery. The drive south has been extended 8ft. (to 67ft.), and here the lode is 42in. wide, and worth 8dwt. Still further south a new crosscut (No. 2) has been started to pick up the lode, and 13ft. has been covered.

Crosscutting for stopefilling—99ft. of this work has been done.

Traveling pass.—Between the 140' and 204' levels a traveling pass is being put in to afford permanent ventilation and an emergency road for the men.

Stopes.—Stone is being raised from the following stopes:

Above the 340 Level, 2 stope; lode 108in. wide, and north 2 dwt.

Stopes above 240 Level: 4 stope; lode 70in. wide, and north 3½ dwt.

Stopes above Intermediate Level (200'): 1 stope; lode 70in. wide and north 6dwt.

Plant and Machinery.—6x. The electrically driven Cornish pump is now in full work. The steam pumps have all been put in thorough repair and will be kept as standbys in case of need. Electric light has been taken down the mine to the various levels. The necessary charges are being made at Koman Shaft for the substitution of self-dumping skip for cages. The capacity of each skip is 15 cub. ft., against the 7ft. truck used in the cage. With automatic tipping devices in the headgear, and a complete remodelling of the old system, there should be a further gain of economy both in power and labor. These changes will probably be completed in another week or so, when we shall restart the battery.

As the battery has been idle during nearly the whole month, no milling return and no cost is presented, the figures being carried forward to next month.

Yours faithfully,

C. G. WARNFORD LOCK,
Gen. Manager.

TIN OUTPUT, PAHANG

The published statement of tin and tin-ore exported from the State of Pahang, from 1st January to 31st July of the present year, shows, in comparison with the corresponding period of last year, a falling off in the output both of block-tin as well as tin-ore, the net decrease amounting to 460.51 piculs, or 27 tons. The only district that shows an increase in the output of tin-ore is Pekan, and that by only 114.40 piculs. The duty collected by the Government amounted to \$85,553.91, as compared with \$104,777.99 during the previous year, the net decrease being \$19,224.08. Unlike the three Western States, where, notwithstanding the low price of the metal, the duty collected was much above the estimates, the duty realized by the Pahang Government during the seven months in question fell short of expectations by \$13,612.09. This falling-off is attributable to the fact that in Pahang duty is collected on 10% *ad valorem*, and, in certain special cases, on 8%; whereas in the other States duty is levied according to a sliding-scale based on the market value of tin of each day in the month. In consequence of this result the average duty collected per bharra in Pahang works out at the low rate of \$19.36. In Ulu Pahang, *i. e.*, Raub and Kuala Lipis, the value of the metal is calculated at the daily rate supplied by the District Treasurer, Kuala Lumpur, less 56 cents per picul on tin for freight, etc., and \$2.02 per picul on ore for smelting charges, freight, etc. For Pekan and Kuantan the average value for the calculation of duty for the month of July was \$69.50.

PERAK.

The output of tin and tin-ore from the State of Perak during the first seven months of the current year shows a net increase of 3,289.04 piculs (196 tons); and in none of the districts has there been any increase in the export of tin, excepting in Selama, where the output was 53 catties. As regards the ore, the quantity won from the Larut district was 9,406.62 piculs (560 tons) more than in the corresponding period last year, and in Selama the increase is the small quantity of 20.22 piculs; all the other districts showing a decrease. As in the other States the low price of tin has been responsible for the net decrease in the amount of duty collected, *viz.* \$620,930.70, the total duty collected during the first seven months of the year being \$2,536,792.16, as against \$3,157,722.16 as collected last year. The increase over this year's estimates amounts to \$272,365.10. The average duty per bharra from January to July, 1904, works out at \$31.17.

It is gratifying, says the *Times of Malaya*, to know that mine owners of Kampar, who had such bad luck last year, are now recouping some of their losses, and much better returns are expected to be shown by the end of the year. Of the pioneer towkays of the place, Wong Lam Yong is reputed to have lost quite \$170,000 on mining last year. A rather severe blow.

GOLD MINES AT JEHOL

The natives of Karachin in Mongolia petitioned for a concession of gold mines at Jehol through the military governor of Jehol. Taotai Lü undertook to look after it; but, there being no prospects, the concession ceased to be carried on. Now upon hearing the news that the government is going to adopt a gold standard, and there is enough gold in the districts of Jehol, the military governor there again wished to work the mines by reducing the royalty so as to make it a paying undertaking. Though he has not petitioned to the Government, it is reported that the matter will be settled at the beginning of the next winter season.—*Sin Wan Pao*.

A GOVERNMENT GOLD MINE

A telegram from London, dated August 29, states that the Government of Japan entirely reserves to itself the recently discovered gold-fields in the prefecture of Iwate, northern Japan. The total yield of the field is officially estimated at £100,000,000, while it is estimated that the annual yield will be 30,000,000 yen (about £3,000,000). Operations on the field will shortly be begun.

TIN MINE REPORTS

THE KINTA MINES.

Returns for the month of August:

Output.....	270 piculs
Approximate Value.....	\$12,000
Water Rent.....	\$ 5,580
Working Expenses.....	\$ 6,500

NEW GOPENG, LTD.

Output.....	220 piculs
Approximate Value.....	\$9,800
Working Expenses.....	\$3,300

A dividend of 6d. per share has been declared.

Oil Wells, Formosa.—According to a civil engineer of the Formosan Government, some rich oil wells were recently discovered in the districts of Banshoryo and Yensui, South Formosa. The quality is superior to that of Byoritsu, and a well is reported to produce about 3½ koku (koku=about 40 gallons) daily.

COAL EXPORT, JAPAN.—The coal export trade of Japan is becoming more depressed. The fuel exported from the port of Moji for foreign ports from the 1st to the 10th inst. amounted to 54,978 tons, while that transported to other home ports in the ten days was returned as 15,420 tons, making a total of 70,558 tons. The stock of coal at the northern port was estimated at 480,000 tons on the 11th inst.

GOLD MINES IN MONGOLIA

Prince Korchin of Mongolia has asked the Peking Government to operate gold mines at Patar-Huchwan districts in the right wing of Korchin, and states that he will engage the Dutch merchant Puckle (?) to buy necessary machinery and engage foreign engineers, and that the undertaking will be made a joint work of Chinese and foreigners. The work will be conducted in accordance with the regulations established by the Board of Commercial Affairs. However, after due investigation by the Board of Commercial Affairs as well as the Waiwupu, it was learned that Prince Korchin had already made an arrangement with a Chinese merchant, Sun Hsuehun, and the German merchant Pilf (?), and the Peking government, fearing future trouble, has ordered the Prince to postpone carrying out the matter for the time being.—*Sin-wan pao.*

KWANTUNG MINES, CHINA.—The numerous valuable mines in Kwangtung are about to be developed by modern processes. In issuing the necessary proclamation, Viceroy Tsien said: The mines have been ordered to be developed with Government sanction, but, as yet, very little work to this end has been carried out, owing to the many objections raised by the people, which objections all arise out of suspicion. Now, it should be realized that funds are urgently needed, and as there are practically no methods that can be devised to raise these funds, we therefore order these mines to be developed as far as possible, so as to increase the interests of the people. For this purpose, mining experts will be engaged to prospect the mines, and the people living around them must not cause any disturbance. The mines may be under official management, or that of the gentry, or under the management of both.—*Universal Gazette.*

COAL MINES IN SHENSI.—The American Minister has written the Wai Wu Pu to the effect that there are many good coal mines in En-an-fu and Yulinfu in Shensi, and these coal mines are not being worked. It is a pity to leave such good resources of wealth lying idle and it is advisable to work these mines jointly by Americans and Chinese, and American financiers are quite willing to advance the expenses necessary.—*Sin Wan Pao.*

The Fangtze coal-mines in Shantung are running to their full capacity, and a large new shaft is being sunk near the railway station. This shaft will be fully 1,200 feet deep and of sufficient capacity to give the mines a combined output of one thousand tons per day.—*N. C. D. News.*

FINANCIAL NEWS

THE NATIONAL BANK OF CHINA, LIMITED

At noon, Saturday, September 3rd, was held an extraordinary general meeting of the shareholders of the above Bank in Hongkong. The chairman, in addressing the meeting, said:

When the bank was started, exchange was over three shillings per dollar, and the capital was laid down in the East at an average of three shillings, but as exchange has reached a much lower level, having even touched 1s. 6½d., it has been felt that the capital should be written down to a true basis, and it is proposed to ask the court in London to allow us to do so. Until this step is taken, it would be impossible to raise fresh capital should we desire it. Under expert advice in London we propose taking the capital at 1s. 8d., and this, with the addition of the balance on 31st December last and capital reserve fund and part of the ordinary reserve, will bring the shares to £5 paid up on a share of £7, instead of £8 paid up on a share of £10. It is hardly necessary to point out to a meeting of business men that, while it puts our house in order, it in no way alters the financial position of the ordinary shareholder from that which exists at present. I submit to you a statement of assets and liabilities as on 31st December, 1903, drawn up so as to give effect to the proposed reduction of capital, which puts the position of the capital account as it will be if passed by you and the court. The only other item altered is that our sterling securities have been altered to 1s. 8d. and the difference shown as an addition to the reserve fund—this is practically only a book entry to put the sterling investment on the same basis as the sterling capital, of which it naturally forms a part. We hope to approach the court on the matter next month, so as to be able to declare our dividend as usual in January next, as, if not put through the court promptly, we cannot entertain the declaration of a dividend until our application is accepted or rejected by the court. Should this resolution be passed by you, we propose calling the confirmatory meeting for Saturday, September 24th, at noon. I have now to come to the abolition of the founders' shares: they at present are worth nothing, because we acknowledge to a loss of capital by the fall in exchange, and by our articles of association the founders' shares are the first to bear such loss and are therefore absolutely wiped out; but in the meeting of ordinary shareholders to be held subsequent to this it will be proposed to pay the founders the par value of their shares—this we deem a very fair proposal, as the founder gets £1 for what is at present worth nothing, and at the same time it is worth the while of the ordinary shareholder to do this, so as to extinguish the right of the founder, which might stand in the way of our raising additional capital should we ever desire to do so; in fact, it is a fair and reasonable compromise and solution of a difficulty with which we feel sure the bulk of you would readily agree, or we would never have brought it before you. I have now to propose the resolution as follows:—"That the capital of the company be reduced from £1,000,000, divided into 750 shares of £1 each (founders' shares), and 99,925 shares of £10 each (ordinary shares) to £699,475, divided into 99,925 shares of £7 each, and that such reduction be effected by writing off the whole amount paid or credited as paid on each of the 750 shares of £1 each and cancelling those shares, and by writing off £3 per share, part of the sum of £8 per share, which has been paid or credited as paid on the 40,453 shares of £10 each which have been issued, and by reducing each of the 99,925 shares of £10 each to a share of £7."

This was declared duly carried.

PHILIPPINE BONDS

On July 18th, ulto., the Bureau of Insular Affairs at Washington issued a circular inviting proposals for the sale of \$3,000,000 of Philip-

pine four per cent one-year bonds. The bids were to be received until 2:30 p. m., August 22, the proceeds to be applied to the retirement of the outstanding \$3,000,000 of Philippine bonds.

The second issue of certificates thus taken up fell due September 1, 1904, and the new issue will be in denominations of \$1,000 each. Like other issues, the certificates will be accepted by the Secretary of the Treasury as security for public deposits on condition that United States bonds released by such certificates be used as security for additional circulation when in the judgment of the Secretary it is desirable to stimulate an increase of national bank circulation. The certificates bear date September 1. Washington advices by last mail state that M. L. Turner, president of the Western National Bank, of Oklahoma City, Oklahoma, was the highest bidder. His bid was 101.41. C. S. Jobes, president of the American National Bank of Kansas City, who secured the last issue of the certificates at 101.181, was present and put in a bid of 100.4535.

Other bidders for the entire lot were Harvey Fiske & Sons and Vermilye & Co. of New York, 101.377; Guaranty Trust Company of New York, 101.26; Dominick & Dominick and William Soloman & Company of New York, 101.141; J. S. Bache of New York, 100.53; Kountz Bros. of New York, 100.252; Fisk & Robinson of New York, 100.125; National Park Bank of New York, 100.577. The bid of Mr. Turner was rather better than had been expected in view of the price paid for the last issue. It is below the prices obtained for the first two issues, which were, respectively, 102.513 and 102.24.

The bidding was spirited and the result highly pleasing to the War Department officials. They regard the high prices offered as indicating that the Philippines have gained a good credit in the money markets. The certificates were over-subscribed nine times. The bidding was close, the highest bidder being less than \$1,000 ahead of his nearest competitor.

SEOUL-FUSAN RAILWAY

A general meeting of the Seoul-Fusan Railway was held at Tokio on August 30th ulto. Mr. Oye, one of the auditors, reported that a loan had been granted to the company by the Government in order to cover the deficiency in the construction expenses. The sum of 165,000 *yen*, granted by the Government as subsidy, was distributed at the rate of 35 *sen* per share for the shares of the first and second issue, and at the rate of 20 *sen* for those of the third issue, or 6 per cent per annum.

During the last half year, the net profits realized from the working of the Seoul-Chemulpo line amounted to 148,000 *yen*, appropriated as follows:—7,400 *yen* for reserve; 22,600 *yen*, redemption of loans; 5,000 *yen*, interest on loans; 80,000 *yen*, special reserve; 10,000 *yen*, supplementary construction expenses; 23,000 *yen*, carried forward. It is stated that, compared with the corresponding period of 1903, the proceeds for the last term of the above line show an increase of 42 per cent, mainly due to the war.

NEW BANK, TOKIO.—Mr. Kichibei Murai, of the well-known tobacco firm, has, it is reported, decided to establish a bank in Tokio with a capital of one million *yen*. It will be opened to business in the course of November next.

SINGAPORE COLD STORAGE

Within the next six or seven months, the s.s. *Guthrie*, which is scheduled to leave Brisbane on March 3rd, will bring the first cargo of refrigerated supplies for the Singapore Cold Storage Co., whose building and plant at Tanjong Pagar will probably be completed by Jan. 12th next. These tidings were elicited at the recent regular meeting of the Company, when the following directors' report was passed:—

As resolved at the Company's statutory general meeting held on December 8th, 1903, the directors have closed the Company's accounts to the 30th June, 1904, which accounts they now submit herewith.

The whole of the expenditure to this latter date has been allocated either to cost of buildings and machinery or to preliminary expenses, and this course will be followed until the completion of the Cold Storage premises, which may be looked for in February next.

These premises are now well advanced, most of the machinery is on the ground, and the insulation of the building, the bulk of the materials for which has been brought from Australia or New Zealand, is progressing satisfactorily.

Freight arrangements have been concluded with Burns, Philp & Co., Limited, of Australia, and two of their steamers, the *Guthrie* and *Airlie*, are regularly running between Sydney and Singapore. The *Guthrie* is now being insulated for the Company's requirements, and the *Airlie* will also be insulated as soon as the necessity arises. It is intended to make the first shipment of frozen supplies from Brisbane per *Guthrie* on March 3rd proximo.

In fulfilment of the undertaking set out in the Company's prospectus, the Queensland Meat Export and Agency Company, Limited, has entered into a contract for such supplies as may be required for a period of five years.

Permission has been obtained from the Government of the Australian Commonwealth to land in Australia certain Mohamedan butchers, in order that the Company may be enabled to comply with the religious requirements of Mohamedan races with regard to the slaughter of stock.—*Straits Times*.

TANJONG PAGAR DOCK CO.

The regularly half-yearly directors' report of the Tanjong Pagar Dock Company, Ltd., over the signature of the chairman, the Hon. W. P. Waddell, reads as follows:

Your directors beg to submit a duly audited statement of accounts, for the half-year ended 30th June, 1904.

The net amount available for distribution for that period, including the sum of \$43,732.43, brought forward from last account, is \$636,251.74.

From this amount the directors recommend that a dividend of \$6 per share be paid for the half-year and an addition of \$150,000 be made to the General Reserve Fund, raising the reserve to \$2,100,000, leaving a balance of \$264,251.74 to be carried forward to next account.

The total amount of the debenture issue is \$1,615,500.

The seventeenth issue, special series of debentures, amounting to \$1,050,500, which matured on 30th June, 1904, was repaid and a new issue, viz:—Series D Debentures—for the same amount has been substituted.

Mr. J. R. Nicholson, the managing director, is at present in London, in consultation with engineering authorities on the Company's proposed scheme of improvements and extensions.

THE PRABAD TRAMWAY COMPANY

The fourth ordinary general meeting of the shareholders of the Prabad Tramway Co., Ltd., of Bangkok, was held during the month of August.

The Directors submitted to the meeting the accounts of the year ending 31st March 1904, and reported that, although the earning at the last festivities at Phra Bat did not come up to their expectations, they would this year again propose to the shareholders the payment of a dividend at the rate of 8 per cent.

S. C. FARNHAM, BOYD & CO., LTD.

12th September.—The shareholders in S. C. Farnham, Boyd & Co., Ltd., are summoned to an extraordinary general meeting this day fortnight to consider the proposal to sell the whole of their undertaking, lock, stock and barrel, to a London company which is to be formed to take it over and carry it on. It is proposed that the shareholders shall receive

for each share of Tls. 100 in the present company the sum of £12 10s., equal at 2s. 6d. exchange to Tls. 100, and shares in the new company to the value of £16 or Tls. 128. This is on the face of it a very favorable sale. Original shareholders in S. C. Farnham & Co., Ltd., will thus receive the equivalent of Tls. 228 for their outlay of Tls. 33.33; those in Boyd & Co., Ltd., will receive this sum for their Tls. 50; and those in the Shanghai E. S. & Dock Co., Ltd., the third of the companies which were amalgamated in the present company, for their Tls. 100. What is to be the total capital of the London company is not stated; but the amount required to purchase the existing company, in cash and shares, amounts to £1,573,200. A large sum will also be required for working capital, and the very considerable extension of plant and buildings which is understood to be contemplated by the London company. A great revival of business is expected here when the present war is over; and it is suggested that the new company will install plant for the manufacture of rails and railway material, engines and machinery of all kinds, and will also undertake shipbuilding on a large scale. There is an undoubted opening in China for such works as it is supposed to be the intention of the company to inaugurate.—*N. China Herald*.

THE WEI-HAI-WEI GOLD MINING COMPANY, LIMITED

The directors of the above Company have decided to issue, upon the following terms and conditions, 2,250 ordinary shares of \$20 each, being part of the 3,000 ordinary shares which up to the present have remained unissued:

(1) Every registered holder of ordinary shares on the Company's register of shares on the 6th September next is entitled to apply for and to have allotted to him or her, on payment at its par value, one new ordinary share for every ten ordinary shares so held by him or her. Forms of application can be obtained at the Company's offices, No. 4, Balfour Buildings, Shanghai, or at the International Banking Corporation, 21a, Szechuan Road, Shanghai. (2) All applications must be forwarded to the International Banking Corporation on or before 15th October next, accompanied by payment in full for the number of shares applied for at their face value, namely \$20 for each ordinary share applied for. (3) Shares unapplied for in accordance with the above conditions may be disposed of by the directors as they may consider expedient in the interests of the Company. By order of the Board of Directors.

STOKES, PLATT & TEESDALE,
Secretaries of the Wei-Hai-Wei Gold Mining Co., Ltd.

Shanghai, 30th Aug., 1904.

FOREIGN CAPITAL IN JAPAN

An official investigation shows that the Japanese companies which have foreigners amongst their shareholders are six in number, with an aggregate paid up capital of Y12,292,500, of which Y2,992,900 are foreign capital. The particulars are as follows:

Company.	Capital paid up.	Japanese.	Foreign.
	Yen.	Yen.	Yen.
Japan Electrical..	200,000	72,000	128,000
Tokio Trading....	25,000	18,750	6,250
Murai Bros.	10,000,000	8,000,000	2,000,000
Akazawa Mining.	5,000	2,600	2,400
Osaka Gas Works.	1,262,500	806,250	456,250
Japan Distillery..	800,000	400,000	400,000
Total.....	12,292,500	9,299,600	2,992,900

THE BANK OF JAPAN

GENERAL MEETING.

The Bank of Japan held a general meeting on Aug. 27. Mr. Matsuo, Governor of the Bank, reported on the business of the 44th semi-annual term and presented the accounts, which were unanimously approved:

	Yen.
Net profit.....	2,195,476.450
Brought forward from last account.....	410,430.462
Total.....	2,605,906.912

Dividend (12 per cent. per annum)	1,800,000.000
Reserve	250,000.000
Rewards to officers.....	129,000.000
Carried forward.....	426,906.912

OSAKA SHOSEN KAISHA.—In January, 1900, the Osaka Shosen Kaisha decided to double its capital—namely, to increase it to 11 million *yen*. Owing, however, to the unfavorable economic conditions in the country, the scheme has since been in abeyance, the necessary working expenses being met by temporary loans. Now the *Kokumin* learns that the company has decided to carry out the plan, and will notify its shareholders to that effect by October 1 next.

BANK OF FORMOSA.—The tenth general meeting of the shareholders of the Bank of Formosa was held at Tokio on the 1st inst. The following balance sheet for the first half of the current year was passed:

	Yen.
Gross profit.....	865,700
Loss.....	710,100
Balance (net profit).....	155,600
Brought from previous account.....	44,300
Total	199,900

Distributed as follows:	
Reserve against losses.....	42,500
Dividend equalization fund.....	5,000
Special reserve.....	5,000
Reward to officers.....	10,700
Dividend (9% per annum).....	90,000
Carried forward.....	46,700

FORMOSA SUGAR REFINING CO.

The regular general meeting of the shareholders of the Formosa Sugar Refining Company took place at Tokio, on the 20th of August. The following accounts for the first half of this year were presented and passed:

	Yen.
Net profit.....	133,851
Brought forward from last account.....	2,172
Total	136,023
To reserve	7,000
Sinking fund for plant and buildings	35,000
Bonus to officials.....	5,000
Dividend (8 per cent. per annum)	77,660
Carried to next account.....	11,363

HOKKAIDO HEMP CO., JAPAN.—The half-yearly general meeting of the shareholders of the Hokkaido Hemp Company occurred in the Nihonbashi Club on the 17th ulto., when the report and accounts for the first half of this year were presented for approval. The profit for the term is said to have reached 125,939 *yen*. At an extraordinary general meeting to be held on the conclusion of the above, the proposal to reduce the Company's capital of 16,000,000 *yen* by 400,000 *yen* was discussed.

KOREAN INDUSTRIES CO., YOKOHAMA.—The subscription list of shares of "Kankoku Kogyo Kaisha" (the Company for promoting Korean Industries) was closed on the 10th ulto. The authorized capital of the company is a million *yen*, represented by ten thousand shares of 100 *yen* each. Out of the total number of shares, six thousand have been taken up by the promoters of the company and the remaining four thousand by the general public. As the returns from Korean and several other local agencies have not yet been received, an approximate estimate cannot be given, but it is believed that the capital has been greatly over-subscribed.

OSAKA SHOSEN KAISHA

The enterprise of the Osaka Shosen Kaisha, and the success that has attended that enterprise, are well known in the Far East. Their fleet comprises 140 steamers, with which they maintain 40 regular services to and from ports in Japan, China, and Korea, and on the Yangtze. Their paid-up capital is 5½ million *yen*, and there is a debenture issue of 4½ millions. The extension of their business has demanded the issue of further capital to the extent of 5½

million yen, which is offered to shareholders on the register, on the 1st of October this year, on the same terms as the existing capital. Twenty-five per cent of the value of each new share will be payable on the 15th of October next, and the date of the next payment will be settled by the directors.

THE PAKNAM RAILWAY, SIAM.—The twenty-sixth general meeting of the shareholders of the Paknam Railway Company, Ltd., was held at Bangkok, on August 22, 1904.

The Board of Directors submitted for information and adoption at the meeting the accounts for the half-year ending 30th June, 1904:

The gross receipts were..... Tcs. 73,829.48
The expenses were..... " 29,906.11

Leaving a profit for the half-year of..... Tcs. 43,923.37
This sum it was proposed to divide as follows:
Depreciation fund..... Tcs. 11,812.92
Contingencies fund.... " 5,950.35
Sinking fund..... " 2,160.10
Dividend for the half-year at 6%..... " 24,000.—43,923.37

YOKOHAMA SPECIE BANK

The half-yearly general meeting of the shareholders of the Yokohama Specie Bank was held at the new building of the Bank on the 10th of September. The following report on the Bank's business during the first half of the current year was adopted:

	Yen.
Gross Profit.....	6,489,418.194
(Including the sum of Y427,- 667.884 brought from last ac- count.)	
Expenditure.....	4,582,417.636
Net Profit.....	1,907,000.558
Distributed as follows:	
Ordinary Reserve.....	200,000.000
Special Reserves.....	100,000.000
Dividend.....	1,080,000.000
(Y6 per Old, New, and Second New Shares; and Y3 per Third New Shares.)	
Carried to next account.....	527,000.558

HONGKONG AND KOWLOON WHARF AND GODOWN COMPANY, LIMITED

INCREASE OF CAPITAL.

An extraordinary and general meeting of the Hongkong and Kowloon Wharf and Godown Company, Limited, was held at the offices of Messrs Jardine, Matheson & Company on the 22nd of September.

The notice convening the meeting was read by the secretary, together with the following resolutions, which were carried unanimously.

1.—That the capital of the company be increased from \$1,500,000 to \$2,000,000 by the creation of 10,000 new shares of \$50 each.

2.—That such new shares be issued at a premium of \$30 per share and be offered to those persons who are registered as shareholders of the company on 1st October, 1904, in the proportion of one new share for every complete three shares held by them on 1st October, 1904.

3.—That the amount due for the new shares shall be called up on 31st December, 1904.

The Chartered Bank of India, Australia and China declared a dividend for the past half year to 30th June, 1904, at 11 per cent. p. a. free of income tax.

The Mercantile Bank of India, Ltd., has declared an interim dividend of 5 per cent. on "A" shares and 5 per cent. on "B" shares, free of income tax.

THE CLIFFORD-WILKINSON TANSAN MINERAL WATER CO., LTD.

The public are invited to take up shares in the Clifford-Wilkinson Tansan Mineral Water Company, Limited, to be incorporated under the Companies Ordinances of Hongkong, 1865 to 1890. The capital of Y500,000 is divided into 5,000 shares of Y100 each. Applications

for prospectuses should be addressed to the bankers of the company—the Chartered Bank of India, Australia and China, and the International Banking Corporation of New York.

HIRANO MINERAL WATER CO., LTD.

The prospectus of the Hirano Mineral Water Company, Limited, of Kobe, Japan, has been issued. The provisional directors are members of well-known oriental firms:—Berigny & Co., W. H. Gill & Co., Dodwell & Co., Ltd., and H. E. Reynell & Co.

The capital stock is divided into five thousand shares, aggregating 125,000 yen. The subscription lists for China close on October 10th. It is stated that applications for shares to double the amount of the capital stock have been received.

THE RUSSO-CHINESE BANK

According to its balance-sheet, says the Odessa correspondent to the *Standard*, the gross profits of the Russo-Chinese Bank last year were 4,292,052 roubles. The sum of 1,800,000 roubles was added to the special reserve fund, and 213,661 roubles were passed to the reserve capital—that is, to the Chinese Government. The Directors received in bonuses 102,881 roubles, and the clerical staff 34,294 roubles. After these various allocations and disbursements a dividend of 8 per cent was paid on the capital of 15 millions of roubles.

THE CHINESE ENGINEERING AND MINING CO., LTD.

The annual general meeting of the shareholders of the Chinese Engineering and Mining Co., Ltd., was held in London on the 13th September.

According to the directors' report, the net result of the year's transactions shows a balance to the credit of profit and loss account of £102,820, made up as follows:

Net Profit after providing for all charges in China.	£151,685
Add Balance brought forward from last year.....	£ 2,119
Gross Receipts in London.	2,754
	4,873
	£156,558

Deduct Expenditure in Europe, viz:	
Salaries, Stores, etc.....	£ 5,906
Debenture Interest.....	29,900
" Redemption.....	10,000
Directors' Fees.....	3,250
Preliminary Expenses, pro- portion written off.....	4,682
	£53,738
Leaving a net balance of.....	£102,820

which the Directors propose to dispose of as follows:

In placing to reserve for de- preciation.....	£20,000
In payment of a dividend of 7½% for the year.....	75,000
Carrying forward.....	7,820

£102,820

THE DOUGLAS STEAMSHIP CO., LTD.

The following is the report for presentation to the shareholders at the twenty-first ordinary general meeting, held at the office of the company, on the 28th of September for the year ending 30th June, 1904:

After paying all running expenses, premia of insurance, remuneration of consulting committee and auditors' fees, there remains a net profit of \$41,662.62, which it is proposed to appropriate as follows:

To pay a dividend of 4% on the capital of the company, which will absorb \$40,000.00, and to write off the balance of \$1662.62 from the values of the company's properties on the 30th June last.

A condition of abnormal depression in the shipping trade of the Far East prevailed during the greater portion of the period under review, and a large number of vessels, otherwise unemployed, were forced to seek employment on

the coast, rendering competition more keen than ever.

In the last few months, however, a marked change for the better has been noticeable, and it is hoped that this will continue.

UNION INSURANCE SOCIETY OF CANTON, LTD.

Report for presentation to the shareholders at the thirty-first ordinary meeting to be held at the society's office on the 20th October, for the year 1903, and for the six months ending June 30th, 1904:

1903.—The net premium collected for the year, after deducting returns and reinsurances, amounts to \$4,256,781.38. After providing for a bonus of 20% on contributions paid in May last, there remains at credit of working account a balance of \$1,178,122.86.

From this sum the directors recommend the payment of a dividend of \$35 per share, equivalent to 35% on the paid up capital of \$100 per share, and an addition to the reserve fund of \$100,000, raising the reserve to \$1,850,000. They further recommend the establishment of a sterling reserve in addition to the present silver reserve, and propose to set aside for this purpose £20,000, which at exchange is 10d. will absorb a further \$218,181.82. The balance remaining of \$509,941.04 they propose to carry forward to underwriting suspense account to close the account for the year 1903.

CANTON INSURANCE OFFICE, LTD.

Report for presentation to the shareholders at the twenty-third ordinary general meeting, to be held at the offices of the general agents, the 21st of October, for the final accounts for the year 1903:

1903 Account.—The result of the year's working is a credit balance of \$445,494.34, out of which, and with the approval of the shareholders, it is proposed to pay a dividend of 34% (\$17 per share), to add \$100,000 to the reserve fund, raising the latter to \$1,400,000, place \$25,000 to the credit of re-insurance fund, and to carry forward the balance of \$150,494.34 to the current year's account.

1904 Account.—To date the working of the office compares favorably with that of the previous year.

JARDINE, MATHESON & CO.,
General Agents.

Hongkong, 27th September, 1904.

WILLIAM POWELL, LIMITED

Report presented to the shareholders at the third ordinary general meeting held on the 27th of September, for the year ended 30th June, 1904:

The profit and loss account, including the sum of \$4,757.42 brought forward from 30th June, 1903, shows a credit balance of \$30,183.33, from which has to be deducted the interim dividend of 5 per cent, paid on 22nd March last, leaving \$24,183.33, which your directors propose to appropriate as follows:

To pay a final dividend of 7 per cent., absorbing - - - - -	\$8,400.00
To write off stock on hand - - - - -	4,000.00
To write off fixtures and fittings - - - - -	2,820.17
To write off goodwill - - - - -	5,000.00
To write off bad debts - - - - -	374.88
To set aside for equalization of dividend - - - - -	3,000.00
To carry forward to next account - - - - -	588.28
	\$24,183.33

A. S. WATSON & CO., LTD.

The issue of new stock in this company ceased to the shareholders on September 30.

The issue was of 30,000 new shares of \$10 each at a premium of ten per cent, or \$11 a share. The applications for shares in the new issue were received by the Hongkong & Shanghai Bank. Transfer books of the Company were closed September 29, till after the 8th October. The present paid-up capital of the Company is \$600,000, divided into 60,000 shares of \$10 each, and the new issue is required to increase the capital of the Company to \$900,000 divided into

90,000 shares of \$10 each. The whole of the premium received from the new issue will be placed to the credit of the permanent reserve fund. The new issue will rank for dividend for the three months ending 31st December, 1904, payable in May, 1905.

S. MOUTRIE & CO., LIMITED.

Report for the year ending 30th June, 1904, as presented to the shareholders at the fifth annual general meeting held at Shanghai, September 27:

The net profit, after paying an interim dividend of 4 per cent on 3,783 shares, amounting to \$7,566, leaves \$19,949.50 to be appropriated, and as the result is in a measure due to the exertions of the staff, the directors recommend that an amount of \$2,000 should be paid to them in the shape of a bonus. The balance of profit and loss account the directors propose to deal with as follows:

To pay a final dividend of 6 per cent (making 10 per cent for the year) on 4,039 shares	... \$12,117.00
To place to a reserve fund	5,000.00
To present as a bonus to the staff	2,000.00
To carry forward to new profit and loss account	832.50
	\$19,949.50

In accordance with the special resolution for increasing the capital of the Company passed at an extraordinary general meeting of the shareholders on the 26th of May, 1903, which was duly confirmed on the 22nd of June, 1903, 1,505 new shares have been allotted, and the directors are offering the balance to the public by advertisement in the local newspapers.

The factory is now in working order, and it is anticipated that the whole of the buildings will be completed by the end of the current month. The business at Tientsin continues prosperous.

THE ASTOR HOUSE HOTEL CO., LTD., SHANGHAI

Report and statement of account to 30th June, 1904, presented at the third annual general meeting:

From the statement, it will be seen that there is a disposable balance of \$75,989.01, which the directors propose to deal with as follows:

To pay a dividend of 10 per cent, absorbing..... \$56,000.00
To write off goodwill account..... 10,000.00
To carry forward..... 9,989.01

Ample depreciation has been allowed on buildings, plant, furniture, fixtures, cutlery, napery, etc.

Hankow Branch.—This has been sublet, and the loss is now about \$5,500 a year. This includes a sum for depreciation, which will reduce the book value of our assets at the end of our lease to a nominal sum.

Issue of Capital.—Owing to the increase of the business, rendering the working capital of the Company insufficient for its requirements, the directors have decided to issue fresh capital to the extent of \$80,000, and to offer same to the shareholders on the register on 22nd August, 1904, at the rate of one new share to every seven old. The shares will be issued at par, and are payable before 30th September, 1904. This new issue will rank for dividend from 1st July, 1904.

THE HONGKONG COTTON SPINNING AND WEAVING CO., LTD.

The annual meeting of shareholders in this concern was held on the 10th of September at the office of the General Managers (Messrs. Jardine, Matheson & Co.). The chairman, in his speech, said that owing to the scarcity and dearth of the raw material their business had been restricted and they were only able to work four days a week. The progress of the war had also interfered with one of their best markets, but they hoped that would now be opened again, and that the new crop of cotton would make up for the shortage from which they had suffered during the past year. The machinery had, owing to their working short time, been

thoroughly overhauled. The balance at credit of Profit and Loss Account for the twelve months to 31st July last is \$85,363, out of which it is proposed to pay a dividend of 5 per cent, absorbing \$62,500, and carry forward the balance of \$22,863 to new account. The report and accounts were passed unanimously.

THE GUTTA PERCHA AND RUBBER OF THE PHILIPPINE ISLANDS

(Continued from page 31.)

It is to be noted that the process gives practically pure gutta and not gutta percha, the resins remaining dissolved in the gasoline. This is in itself a great advantage, as the gutta could be used directly for bringing up the percentage in inferior grades of gutta percha and so make them suitable for cable insulation. The commercial value of this gutta has not been determined, but should be rated at about \$600, Mexican, per picul, judging from the price of the best gutta percha. In this way three piculs of Philippine gutta percha at \$210, Mexican, will produce 1 picul of pure gutta valued at \$600, Mexican, or a gain of \$390 for every three piculs of gutta percha (or the equivalent in bark and leaves) handled.

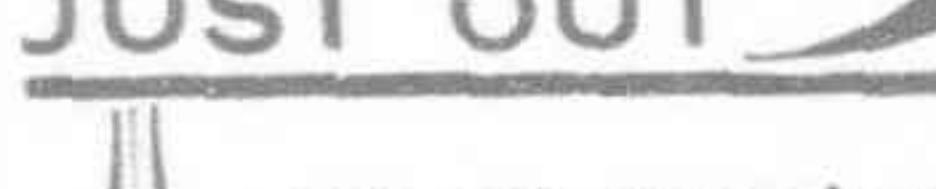
XI. PESTS AND PARASITES.

An instructive bulletin has been issued by

the Zimmerman (27) of the Lands Plantentuin at Buitenzorg, Java. His field of observation covered the large experimental gardens of Buitenzorg and at Tjipitir, where many thousands of gutta percha trees of various species are now growing. While the same conditions do not obtain there as are encountered in the forest, it is certain that they are as badly if not worse off on account of the multitude of insects of all kinds which are attracted by the other plants of the gardens. In fact he considers the test a severe one, and his conclusions that there are practically no insect pests which might be considered dangerous is very gratifying. Cattle and goats eat the leaves greedily and young trees must be protected until high enough to be out of reach.

(To be continued.)

A new company, called the Gapis and Sempani Syndicate, has been formed to carry on tin mining operations in the Raub district. Mr. B. F. Boerma is the Managing Director, with headquarters at Tras. The Syndicate has acquired about 500 acres of land from Raja Impeh, who is one of the pioneers of Pahang, and has been interested in the State from the days prior to British protection.—*Straits Times*

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FAR EASTERN STOCKS AND QUOTATIONS

COURTESY OF BENJAMIN, KELLY & POTTS, SHAREBROKERS, HONGKONG-MANILA, 30th September, 1904.

STOCKS	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present* PER CENT	CLOSING QUOTATIONS
Banks.												
Hongkong and Shanghai Banking Corporation.....	1865	\$10,000,000	80,000	\$125	\$125	g \$10,000,000 s \$7,000,000 i \$250,000	... \$1,492,554	30-6-04	£1-10s. @ exchange 1s. 9 15-16 = \$16.41 for first half year 1904	22-8-04	6 1/4	(\$650 sales London £67)
National Bank of China, Limited.....	1891	£699,475	99,925	£7	£7	c £175,533 £191,973	..... £21,668	31-12-03	£2 (London 3s. 6) for 1903	1-2-04	5 1/4	£39
Marine Insurances.												
Union Insurance Society of Canton, Limited.....	1867	\$2,500,000	10,000	\$250	\$100	f \$1,750,000 f \$569,143 j \$784,445 u \$906,872 \$900,000	... \$1,959,926	30-6-03	\$32 for 1902	9-10-03	5	\$605 buyers
China Traders' Insurance Co., Ltd.	1865	\$2,000,000	24,000	\$83.33	\$25	f \$151,992 j \$331,342 u \$322,138	..... Nil.	30-4-03	\$4 for year ended 30-4-1903.....	9-12-03	6 1/4	\$61
North China Insurance Co., Ltd.....	1863	£150,000	10,000	£15	£5	T 500,000 h T 31,850	..... T 271,589	30-6-03	£ Interim of 10s. at 2s. 5 1/4 = £4.10 a/c. 1903.....	2-5-04	—	T 72 1/2 buyers
Yangtsze Insurance Association, Ltd.	1862	\$800,000	8,000	\$100	\$60	f \$700,000 f \$37,794	..... £432,475	31-12-03	£12 for 1902	22-4-04	9 3/4	\$140
Canton Insurance Office, Ltd.....	1881	\$2,500,000	10,000	\$250	\$50	j \$1,300,000 j \$50,000	..... £110,551	31-12-02	£15 for 1902	23-10-03	6 1/2	\$240 buyers
Fire Insurances.												
Hongkong Fire Insurance Co., Ltd.....	1868	\$2,000,000	8,000	\$250	\$50	\$1,170,288 \$1,000,000	..... £371,110	31-12-03	\$22 1/2 for 1902	7-3-04	6 3/4	\$332 1/2 sales
China Fire Insurance Co., Ltd.	1870	\$2,000,000	20,000	\$100	\$20	x \$125,675 f \$2,561	..... £329,047	31-12-03	\$6 dividend and \$1 bonus for 1902..	11-3-04	8	\$87 buyers
Shipping, Tug and Cargo Boats.												
Hongkong, Canton and Macao Steam-boat Company, Ltd.....	1865	\$1,200,000	80,000	\$15	\$15	e \$250,000 d \$500,000 f \$157,555	..... £16,362	30-6-04	\$1 1/2 for first half-year 1904	17-8-04	10 1/2	\$28 1/2 buyers
Indo-China Steam Navigation Company, Ltd.....	1882	£1,200,000	(1) 60,000	£10	£10	i £205,000 £100,000	..... £5,853	31-12-03	10s. for 1903.....	13-7-04	5	\$126 buyers
China and Manila Steamship Co., Ltd.	1882	£1,500,000	30,000	\$50	\$50	none	Dr. \$63,123	31-12-03	\$5 for 1900	25-3-01	—	\$25 buyers
Douglas Steamship Co., Ltd.	1883	\$1,000,000	20,000	\$50	\$50	i \$185,000 i \$85,439	..... Nil.	30-6-04	\$2 for year ended 30-6-1904	29-9-04	6 1/4	\$32 ex div.
"Star" Ferry Co., Ltd.....	1898	£200,000	10,000	£10	£10	£60,000 i £15,093	..... £1,287	30-4-04	Div. \$1 80, bonus 40 cts. for year end- " 80.90, " 20 " ing 30-4-04.	2-6-04	5 1/2 3 1/2	\$41 \$30
Straits Steamship Co., Ltd.	1890	\$500,000	(2) 5,000	\$100	\$100	e £21,075 r £18,000 i £10,153	..... £33,648	31-12-03	£5 for 2nd 1/2 year, making £13 for '03	21-4-04	8 1/2	\$145 sellers
"Shell" Transport & Trading Co., Ltd.	1898	£2,000,000	2,000,000	£1	£1	£400,000 £19,555	..... £19,555	31-12-02	Interim of 1s. (Coupon No. 4) for '03	29-1-04	4 1/2	25/ buyers
Taku Tug and Lighter Co., Ltd.	—	T. T1,500,000	30,000	T. T50	T. T50	T. T98,000 d T201,614	..... T865	31-12-03	Interim of T1 1/2 for 1904	20-7-04	10	T30 buyers
Shanghai Tug and Lighter Co., Ltd.	1903	T1,500,000	200,000	T50	T50	none	..... T55,541	31-12-03	Interim of T2 for 1904	13-8-04	9 3/4 8	T46 1/2 buyers T45 buyers
Refineries												
China Sugar Refining Company, Ltd....	1878	\$2,000,000	20,000	\$100	\$100	none	Dr. \$147,717	31-12-03	Interim of \$5 for 1904.....	29-8-04	—	\$232 buyers
Luzon Sugar Refining Company, Ltd....	1882	\$700,000	7,000	\$100	\$100	none	Dr. \$73,905	31-12-03	\$3 for 1897	24-3-98	—	\$6
Perak Sugar Cultivation Co., Ltd....	—	T350,000	7,000	T50	T50	T100,000	..... T1,456	3-9-03	T2 1/2 for year ending 30-9-03	17-12-03	4 1/4	T60 buyers
Mining.												
Société Francaise des Charbonnages du Tonkin	1888	F.4,000,000	16,000	F.250	F.250	f F.307,740 a F.1,529,652	..... F.87,333	31-12-03	Final of F.25, making F. 50 for 1903.	1-9-04	—	\$490
Raub Australian Gold Mining Co., Ltd.	1892	£200,000	150,000	£1	18/10	£4,873	Dr. £7,236	31-3-03	No. 12 of 1s.....	28-1-01	—	\$6 1/2 sellers
Chinese Engin'ring and Mining Co., Ltd.	1901	£1,000,000	1,000,000	£1	£1	q £20,000	..... £7,820	29-2-04	No. 3 of 1s 6d.....	15-9-04	—	T7 1/2 sales

STOCKS	WHEN ESTAB- LISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotations*	CLOSING QUOTATIONS
										PER CENT		
Docks, Wharves and Godowns.												
Hongkong & Whampoa Dock Co., Ld.	1901	\$2,500,000	50,000	\$50	\$50	i \$25,500	\$505,471	30-6-04	\$6 div. & \$2 bonus for 1st $\frac{1}{2}$ year '04	23-8-04	6 $\frac{1}{2}$	\$225 buyers
S. C. Farnham, Boyd & Co., Ld.	1901	T5,520,000	55,200	T100	T100	T900,000	T48,153	30-4-04	{ Final of T7 making T12 for year	20-7-04	7	T181 buyers
Tanjong Pagar Dock Co., Ld.	1864	\$3,700,000	37,000	\$100	\$100	\$1,950,000	\$43,732	31-12-03	{ \$6 for second half year '03.....	23-3-04	4 $\frac{3}{4}$	\$250 sellers
Riley Hargreaves & Co., Ld.	1899	\$875,000	6,000	\$100	\$100	\$150,000	\$40,936	31-12-03	{ \$10 div. and \$2 $\frac{1}{2}$ bonus for '03.....	7-3-04	6 $\frac{1}{4}$	\$195 sales
Do. (Preference)			2,750						{ \$7 dividend.....		6 $\frac{1}{4}$	\$110
Howarth Erskine, Ld.	1901	\$1,200,000	12,000	\$100	\$100	\$14,000	\$29,926	30-6-03	\$10 div. & \$2 $\frac{1}{2}$ bonus for '02/3	27-8-03	6	\$210 buyers
Hongkong and Kowloon Wharf and Godown Co., Ld.	1886	\$1,500,000	30,000	\$50	\$50	q \$50,989	\$28,015	31-12-03	Interim of \$2 $\frac{1}{2}$ for '04	31-8-04	4 $\frac{1}{2}$	\$113 buyers
Shanghai and Hongkew Wharf Co.	1902	T2,000,000	20,000	T100	T100	T487,210	T22,895	31-12-03	Interim of T4 for '04.....	23-8-04	6 $\frac{3}{4}$	T158 $\frac{1}{2}$
Yangtsze Wharf and Godown Co., Ld.	1902	T250,000	2,500	T100	T100	r T50,913	T6,000	31-12-03	T18 for '03.....	31-3-04	9 $\frac{1}{2}$	T189 sales
New Amoy Dock Co., Ld.	1892	\$40,500	6,000	\$6 $\frac{3}{4}$	\$6 $\frac{3}{4}$	\$55,500	\$489	31-12-03	\$1 $\frac{1}{4}$ for '03.....	5-5-04	4 $\frac{1}{4}$	\$27 $\frac{1}{2}$ sellers
Lands, Hotels and Buildings.												
Hongkong Land Investment and Agency Co., Ld.	1889	\$5,000,000	50,000	\$100	\$100	e \$500,000	\$51,966	31-12-03	Interim of \$6 for '04.....	27-7-04	8	\$151 sellers
Shanghai Land Investment Co., Ld.	1901	T2,600,000	52,000	T50	T50	e T800,000	T37,634	31-12-03	Interim of T3 for '04.....	18-7-04	7 $\frac{1}{4}$	T113 buyers
Tientsin Land Investment Co., Ld.	1902	T772,600	7,726	T100	T100	x T150,800	T17,114	31-12-03	Interim of T3 for 1904	25-7-04	7	T125 sales
China Land and Finance Co., Ld.	1903	T300,000	6,000	T50	T50	i T54,626	T325	31-12-03	Interim of T2.....	1-10-03	—	T55
Kowloon Land and Building Co., Ld.	1889	\$300,000	6,000	\$50	\$30	none	\$636	31-12-03	\$2 60 for '03.....	21-1-04	6 $\frac{1}{2}$	\$39 buyers
Wei-hai-wei Land and Building Co., Ld.	1899	T91,850	3,764	T25	T25	none	Dr. T5,150	31-12-03	None	—	—	T12 buyers
West Point Building Co., Ld.	1889	\$625,000	12,500	\$50	\$50	none	\$1,362	31-12-03	Interim of \$1 $\frac{1}{2}$ for '04.....	27-7-04	5	\$59 buyers
Hongkong Hotel Co., Ld.	1866	\$600,000	12,000	\$50	\$50	r \$11,824	\$11,668	30-6-04	\$5 for first half-year for '04.....	29-8-04	7 $\frac{3}{4}$	\$136 sales
Astor House Hotel, Ld. (Tientsin)	—	T. T100,000	2,000	T. T50	T. T50	T41,000	T655	29-2-04	Final of T4 making T9 for the year.....	19-4-04	6	T150
Astor House Hotel Co., Ld. (Shanghai)	1901	\$750,000	(3) 30,000	\$25	\$25	none	\$9,989	30-6-04	\$2 $\frac{1}{2}$ for year ending 30-6-04.....	30-8-04	9	\$27 sales
Hotel des Colonies Co., Ld. (Shanghai)	1902	T225,000	9,000	T25	T25	n T13,986	T680	31-3-04	To 87 $\frac{1}{2}$ for the year ending 31-3-04.....	28-5-04	4 $\frac{1}{4}$	T21 sales
Queen's Hotel (Wei-hai-wei)	1902	T225,000	9,000	T25	T25	—	—	—	First year	—	—	T25
Tientsin Hotel des Colonies, Ld.	1903	T70,000	1,400	\$50	\$50	none	Dr. T2,123	30-4-04	Interim of T3 $\frac{1}{2}$	23-9-03	—	T37 sales
Humphreys' Estate & Finance Co., Ld.	1887	\$1,500,000	150,000	\$10	\$10	i \$200,607	\$99,177	31-12-03	90 cents for '03.....	11-2-04	7	\$12 $\frac{3}{4}$ buyers
Cotton Mills.												
Ewo Cotton Spinning and Weaving Co., Ld.	1895	T750,000	15,000	T50	T50	none	T11,655	31-10-03	T4 for year ended 31-10-03.....	22-12-03	14	T28
International Cotton Manufacturing Co., Ld.	1895	T750,000	(4) 10,000	T75	T75	n T30,098	T88,034	30-9-03	Interim of 3 per cent account 1898 ..	30-4-1898	—	T25
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	T800,000	(5) 8,000	T100	T100	none	T15,500	31-12-03	Interim of 4 $\frac{1}{2}$ a/c 1898 on 6,000 shares ..	1-8-1898	—	T32 $\frac{1}{2}$
Soy Chee Cotton Spinning Co., Ld.	1895	T1,000,000	2,000	T500	T500	l T5,658	T26,389	31-12-03	4 $\frac{1}{2}$ for 1897.....	2-2-1898	—	T150
Hongkong Cotton Spinning, Weaving and Dyeing Co., Ld.	1901	\$1,250,000	125,000	\$10	\$10	none	\$22,862	31-7-04	50 cents for year ended 31-7-04	12-9-04	4 $\frac{1}{2}$	\$11 $\frac{1}{2}$ sellers
Cigar and Tobacco Cos.												
Shanghai-Sumatra Tobacco Co., Ld.	1902	T600,000	(6) 30,000	T20	T20	v T24,820	T1,091	31-10-03	Interim of T3 per share.....	31-8-04	9	T65 sales
Alhambra, Limited.....	1898	\$60,000	300	\$200	\$200	\$43,000	\$57	31-12-03	\$125 for year ending 30-6-1900	15-8-01	—	\$150 sellers
Philippine Company, Limited.....	1904	\$675,000	67,500	\$10	\$10	—	—	—	First year	—	—	\$9 $\frac{1}{2}$
Miscellaneous.												
Green Island Cement Co., Ld.	1889	\$1,000,000	100,000	\$10	\$10	\$350,000	\$32,115	31-12-03	\$1 $\frac{1}{2}$ for 1903	7-4-04	5	\$31 buyers
China-Borneo Co., Ld.	1903	\$720,000	(7) 60,000	\$12	\$12	none	Nil.	31-12-03	60 cents for 1903	21-3-04	5 $\frac{1}{2}$	\$11 buyers
A. S. Watson & Co., Ld.	1886	\$600,000	60,000	\$10	\$10	e \$25,000	\$2,883	31-12-03	Final of 50 cents making \$1 for '03..	2-6-04	7	\$14 $\frac{1}{2}$ buyers
Watkins, Limited.....	1899	\$100,000	10,000	\$10	\$10	e \$4,802	\$1,042	31-12-03	\$1 for 1903	28-3-04	10	\$10 buyers
Singapore Dispensary, Ld.	1891	\$30,000	600	\$50	\$50	\$19,000	\$800	31-7-03	\$5 for year ended 31-7-02	11-11-03	7	\$70
China Provident Loan and Mortgage Co., Ld.	1898	\$1,000,000	100,000	\$10	\$10	\$55,000	\$1,171	31-12-03	80 cents for 1903	18-1-04	8 $\frac{1}{2}$	\$9 $\frac{1}{2}$
Hongkong Electric Co., Ld.	1889	\$600,000	30,000	\$10	\$10	none	\$1,747	30-4-04	{ \$1 50 cents for year ending 30-4-04	18-7-04	{ 6 $\frac{3}{4}$ 5 $\frac{1}{2}$	\$15 \$9 buyers

STOCKS	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation*	CLOSING QUOTATIONS
Miscellaneous.—Continued												
Hongkong and China Gas Co., Ld.	1864	£70,000	7,000	£10	£10	£23,109	£7,625	31-12-03	{ Final of 6 per cent and bonus of 1 per cent making 22s. for '03... }	25-5-04	7½	\$160 buyers
Shanghai Gas Co., Ld.	1903	T800,000	16,000	T50	T50	T125,000	T7,548	31-12-03	Interim of T3½ for '04.....	29-7-04	8	T99 sales
Shanghai Waterworks Co., Ld.	1881	£144,000	7,200	£20	£20	T140,000	T7,369	31-12-03	Interim of 15s. for '04.....	25-7-04	7¾	T387½ buyers
Tientsin Waterworks Co., Ld.	1901	T. T200,000	2,000	T. T100	T. T100	T15,259	T2,211	30-4-04	Final of T4 making T8 for '03/4.....	20-6-04	6½	T. T130
Tientsin Native City Waterworks Co., Ld.	1902	T294,100	2,941	T100	T100	none	T413	31-12-03	T2 for half year.....	9-3-04	—	T. T110
Hall & Holtz, Ld.	—	\$420,000	(8)	21,000	\$20	\$186,000	\$13,104	29-2-04	Final of \$1½ making \$3½ for the year	2-5-04	11½	\$31 buyers
Lane, Crawford & Co., Ld. (Shanghai)	1903	\$250,000	2,500	\$100	\$100	none	\$21,582	29-2-04	Final of \$7 making \$12 for the year	29-4-04	8½	\$140 buyers
H'kong Rope Manufacturing Co., Ld.	1883	\$500,000	10,000	\$50	\$50	\$50,000	\$8,395	31-12-03	\$10 for 1903.....	8-2-04	7½	\$140
Geo. Fenwick & Co., Ld.	1889	\$150,000	6,000	\$25	\$25	\$70,000	\$10,517	31-12-03	\$3.75 for 1903.....	11-3-04	7¾	\$47 sellers
Hongkong Ice Company, Ld.	1881	\$125,000	5,000	\$25	\$25	\$35,000	\$5,844	31-12-03	Interim of \$4 for 1904.....	2-8-04	7½	\$250 buyers
Straits Ice Company, Ld.	1884	\$200,000	2,000	\$100	\$100	45,000	—	—	\$7½ for second half year '03.....	—2-04	—	—
Hongkong High-Level Tramways Co., Ld.	1887	\$125,000	1,250	\$100	\$100	\$30,000	\$4,283	30-11-03	\$20 for year ending 30-11-03.....	24-12-03	9	\$165 sales
Dairy Farm Company, Ld.	1896	\$75,000	(9)	10,000	\$7½	\$6	\$20,000	\$3,029	\$1¼ for year ending 31-7-03.....	20-11-03	5¾	\$22 buyers
Campbell, Moore & Co., Ld.	1886	\$12,000	1,200	\$10	\$10	\$3,500	\$596	31-12-03	\$3 for 1903.....	2-4-04	8½	\$37 buyers
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377 10s	8,604	12s. 6	12s. 6	none	£161	31-12-03	6d. per share for '03.....	21-7-04	5½	\$5
United Asbestos Oriental Agency, Ld.	1896	\$100,000	{ 9,900	\$10	\$4	}\$20,000	\$480	31-5-04	{ 90 cents for year ended 31-5-04 ..	6-8-04	{ 9½	\$9½ buyers
Do. do. (Founders')	—	100	100	\$10	\$10	—	—	—	{ \$29.70 for year ended 31-5-04 ..	—	{ 16¾	\$180 buyers
Tebrau Planting Co., Lt.	1897	\$100,000	20,000	\$5	\$5	none	Dr. \$24,551	30-4-04	None.....	—	—	\$1 buyers
Hongkong Steam Waterboat Co., Ld.	1900	\$75,000	7,500	\$10	\$10	none	\$1,548	30-9-03	Interim of 70 cents.....	10-4-04	7	\$21 buyers
China Light and Power Co., Ld.	1901	\$300,000	30,000	\$10	\$10	none	\$3,739	29-2-04	None.....	—	—	\$10
William Powell, Ld.	1901	\$120,000	12,000	\$10	\$10	\$3,000	\$588	30-6-04	Final of 70 cts. making \$1.20 for 03/4	28-9-04	10	\$11¾ ex div.
Steam Laundry Co., Ld.	1902	\$75,000	{ 5,000	\$5	\$5	none	\$3,644	31-5-04	{ 60 cents for year ended 31-5-04 ..	2-8-04	8½	\$8 buyers
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	G.2,500,000	25,000	G.100	G.100	T334,669	T27,187	31-10-03	{ Third quarterly dividends of T10 ..	15-9-04	13	T300 buyers
Shanghai Horse Bazaar Co., Ld.	1904	T270,000	5,400	T50	T50	T45,000	T10,247	31-12-03	{ making so far T30 account 04 ..	—	—	—
Shanghai Pulp and Paper Co., Ld.	—	T450,000	4,500	T100	T100	T10,000	T3,288	31-12-03	T5 for 1903.....	8-4-04	5	T100 buyers
Central Stores, Ld.	—	\$91,845	{ 6,000	\$15	\$12	\$20,000	\$1,253	31-12-03	Interim of T6 for '04.....	20-7-04	7¾	T155 buyers
Do. (Founders')	—	123	—	—	—	—	—	—	{ Interim of \$1.20 for '04 ..	20-7-04	11¾	\$22 sellers
Do. (New Issue)	1904	\$360,000	24,000	\$15	\$7½	—	—	First year.....	{ None.....	—	—	\$100
E. L. Mondon, Ld.	1902	T350,000	7,000	T50	T50	none	Dr. T152,318	31-12-03	Preferential of 7% for '04.....	20-7-04	6½	\$8 buyers
S. Moutrie & Company, Limited	1899	\$200,000	4,000	\$50	\$50	\$5,000	\$832	30-6-04	{ Final of \$3 making \$5 for year ..	28-9-04	9¾	\$52 ex div.
China Flour Mill Co., Ld.	—	T200,000	4,000	T50	T50	T25,000	T1,942	31-12-03	{ end. 30-6-04 ..	23-3-04	9½	T65 sales
Katz Brothers, Ld.	1896	\$1,000,000	10,000	\$100	\$100	\$375,000	—	—	T6 for 1903.....	—3-04	9¾	\$135 buyers
Straits Trading Co., Ld.	1887	\$2,500,000	250,000	\$10	\$10	\$650,000	\$83,405	30-9-03	{ \$1 dividend and 25 cents bonus ..	2-12-03	7	\$36½ buyers
Fraser & Neave, Ld.	1898	\$225,000	4,500	\$50	\$50	\$169,116	\$2,706	31-12-03	{ for half year ended 30-9-03 ..	26-3-04	7½	\$100 buyers
Maynard & Co., Ld.	1901	\$34,000	3,400	\$10	\$10	none	\$803	31-12-03	\$5 dividend and \$2½ bonus for '03 ..	—1-04	7¾	\$26 sales
Shanghai and Hongkong Dyeing and Cleaning Co., Ld.	1903	\$60,000	1,200	\$50	\$50	—	—	First year.....	—	—	—	\$50
South China Morning Post, Ld.	1903	\$150,000	6,000	\$25	\$25	—	Dr. \$39,020	29-2-04	None	—	—	\$25

LOANS AND DEBENTURES	AGENTS FOR THE LOAN	AMOUNT OF LOAN	PAR VALUE	OUT-STAND'G BONDS	WHEN PAYABLE.	CLOSING QUOTATIONS
Chinese Government, 7 per cent. Silver Loan 1886 E.....	H. & S. Bk. Cor.	T767,200	T250	2073	Mar. 31st & Sept. 30th each year until Mar. 31st, 1917.	par.
Hongkong & Kowloon Wharf & Godown Co., Ld., 5½% Debentures of 1894||	Do.	\$500,000	£	all	Half yearly on March 31st and September 30th.....	par.
Hongkong Hotel Co., Ld., 6% Mortgage Debentures of 1899†	Do.	\$500,000	\$500	† all	Half yearly, June 30th and December 31st	par.
Chinese Engineering & Mining Co., Ltd., 6 per cent Debentures of 1902†	—	£500,000	£	£490,000	Half yearly, January 1st and July 1st.....	par.

a Amortisation Fund.

b Building Reserve Account.

c Capital Reserve Fund.

d Depreciation and Insurance Fund.

e Equalization of Dividend Fund.

f Exchange and Investment Fluctuation Account.

g Gold Reserve Fund.

h Exchange Reserve Account.

i Insurance Fund.

j Reinsurance Fund.

k Contingencies Account

l Legal Reserve Fund.

m Electric Light Installation Fund.

n Sinking Fund.

o

p Authorized capital \$2,000,000.

q Depreciation and Repair Fund.

r Repairs and Renewals Account.

s Silver Reserve Fund.

t

u Underwriting Suspense Account.

v Special Works Fund.

w

x Extra Reserve Fund.

y

z 420 held by the Company.

† First issue of 60,000 of which 10,411 unallotted.

‡ 785 shares unissued.

§ 7,600 shares unissued.

¶ 1,616 shares unallotted.

§ 842 shares unallotted.

|| Only 13,000 shares issued.

|| 14,000 shares unissued.

§ 399 shares unissued.

o 1,166 shares unissued.

* Based on last year's dividend.

|| In exchange for the debentures of 1891.

|| In certificates of \$5000, \$1000, \$500 and \$250.

† In certificates of £20 and £100

SINGAPORE SHARE QUOTATIONS.

NAME	DATE OF FORMATION	CAPITAL	CAPITAL PAID UP	NO. OF SHARES	ISSUE VALUE	PAID UP	RESERVE	LAST DIVIDEND	SINCE LAST MAIL		CLOSING QUOTATIONS
									HIGHEST	LOWEST	
Mining.											
Bersawah Gold Mining Co., Ltd.....	1900	\$175,000	115,000	13,500 ¹	10	7.50	.....	.....	.....	.....	14.50 sellers
" " " " Deferred..				4,000	10	10	.....	.....	.....	.....	8 buyers
Bruseh Hydraulic Tin Mining Co., Ltd.....	1901	600,000	600,000	60,000	10	10	.....	.....	.....	.....	3.50 sellers
Kadana Gold Mining Co., Ltd.....	1901	300,000	220,000	20,000	10	10	.....	.....	.....	.....	10 nominal
" " " " Pref.....				10,000	10	5	.....	.....	.....	.....	6 "
Kechau Goldfields, Ltd. Fully paid.....	1902	£30,000	£16,175	6,207	1	1	.....	.....	.....	.....	10 sellers
" " " " Contrib.....				10,493 ²	1	19/-	.....	.....	.....	.....	9.50 sellers
Pahang Corporation Ltd.....	1889	£250,000	244,306	244,306	1	1	20,000	3 per cent for year ending 30-6-02.	0.95	0.85	3.75 sellers
Pahang Kabang Ltd.....	1890	375,000	366,000	360,000	1	19/6	.....	.....	.....	.....	0.85 sellers
" " " " Pref.....				15,000	1	1	.....	.....	.....	.....	nom.
Queensland Raub G. M. Co., Ltd. Fully paid.....	1901	£146,700	100,866	110,000	1	11/8	.....	.....	.....	.....	0.30 sellers
" " " " Contrib.....				36,700	1	1	.....	.....	.....	.....	6.00 sellers
Raub Aust. Gold Min. Co., Ltd. Fully paid.....	1892	200,000	191,250	50,000	1	1	4,873	1s. paid January, '01	.....	.....	5.75 sellers
" " " " Contrib....				150,000	1	18/10	.....	.....	.....	.....	195
Redjang Lebong Mining Co.....	1898	f.2,000,000	1,800,000	20,000 ³	100	100	.....	20 per cent for year ending 31-12-03.	.....	.....	4 sellers
Royal Johore Tin Mining Co., Ltd.....	1900	\$220,000	220,000	22,000	10	10	.....	5 " for year ending 15-2-04.	.....	.....	4.00 sellers
Sipiau Tin Co., Ltd.....	1899	230,000	230,000	23,000	10	10	8,000	5 " for $\frac{1}{2}$ year ending 30-6-03	.....	.....	10 nom.
South Raub Gold Min. Synd. Ltd.....	1898	100,000	100,000	1,000	100	100	.....	.....	.....	.....	9 sellers
The Belat Tin Mining Co., Ltd.....	1903	300,000	300,000	30,000	10	10	.....	.....	21	20	20.00 buyers
Tronoh Mines, Ltd.....	1902	£160,000	149,185	160,000 ⁵	1	1	.....	1s. paid May, '03.	.....	.....	10
Duff Development Co., Ltd.....	1903	£400,000	£350,000	400,000 ⁶	1	1	.....	.....	.....	.....	.....
General.											
Fraser & Neave, Ltd.....	1898	225,000	225,000	4,500	50	50	112,500	10 per cent and 5 per cent bonus for '03	100	99	100 sales
H'kong and Shanghai Banking Corporation	1865	10,000,000	10,000,000	80,000	125	125	10,000,000 ⁹	30s. div. and 10s. bonus at 1s. 8 $\frac{1}{2}$ = \$22.99.4 per share for $\frac{1}{2}$ year ending 31-12-03 .....	.....	.....	650
Howarth Erskine, Ltd.....	1901	1,200,000	1,200,000	12,000	100	100	140,000	10 & 5 p. ct. bon. for yr. end 30-6-04.	.....	.....	200
Maynard & Co., Ltd.....	1901	34,000	34,000	3,400	10	10	.....	20 per cent for year ending 31-10-03.	185	180	185 buyers
Riley, Hargreaves & Co., Ltd.....	1899	875,000	875,000	6,000	100	100	150,000	10 p. ct. and $2\frac{1}{2}$ p. ct. bon. for year '03	.....	112	112 buyers
" " " " 7% Pref.....				2,750	100	100	.....	7 p. ct. for year 1903.	.....	.....	10 nominal
Singapore Cold Storage Co., Ltd. Fully paid.....	1903	600,000	130,000	1,000	10	10	.....	.....	.....	.....	5.10
" " " " Contrib....				24,000 ⁴	10	5	.....	.....	.....	.....	72.50 sales
Singapore Dispensary Ltd.....	1891	30,000	30,000	600	50	50	19,000	12 $\frac{1}{2}$ per cent for year ending 31-7-04	72.50	70	72.50 sales
Straits Ice Co., Ltd.....	1884	200,000	200,000	2,000	100	100	45,000	7 $\frac{1}{2}$ " for $\frac{1}{2}$ year ending 31-12-03	.....	165	165 sellers
Straits Steam Ship Co., Ltd.....	1890	500,000	421,500	5,000 ⁷	100	100	400,000	5 per cent for $\frac{1}{2}$ year ending 31-12-03	.....	150	150 sellers
Straits Trading Co., Ltd.....	1887	3,000,000	2,500,000	300,000 ⁸	10	10	169,228 ¹¹	10 p. ct. & 25cts. bon. $\frac{1}{2}$ yr. end 31-3-04	39	38.50	38.50 sales
Tanjong Pagar Dock Co., Ltd.....	1864	3,700,000	3,700,000	37,000	100	100	1,021,395 ¹²	\$6 for half year ending 30-6-04.....	240	237.50	240 sales
Debentures.											
Howarth Erskine Ld. 7 per cent ...	250,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 per cent prem.
Singapore Municipal 6 " ...	400,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	nominal
" " 5 " ...	1,878,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	prem. buyers
" " 4 " ...	655,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	dis. nominal
Riley, Hargreaves & Co., Ltd. 6p. cent	225,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	prem. buyers
Tanjong Pagar Dock Co., Ltd. 6 " ...	250,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	prem. buyers
" " 5 " ...	1,365,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	prem. buyers

¹ 3,500 unissued.² 13,300 "³ 2,000 "⁴ 35,000 unissued.⁵ 10,815 "⁶ 50,000 "⁷ 785 unissued.⁸ 50,000 "⁹ Special Gold Reserve Fund.¹⁰ Insurance Fund.¹¹ Sundry Reserves.¹² Sundry Reserves.

Singapore, 5th October, 1904.

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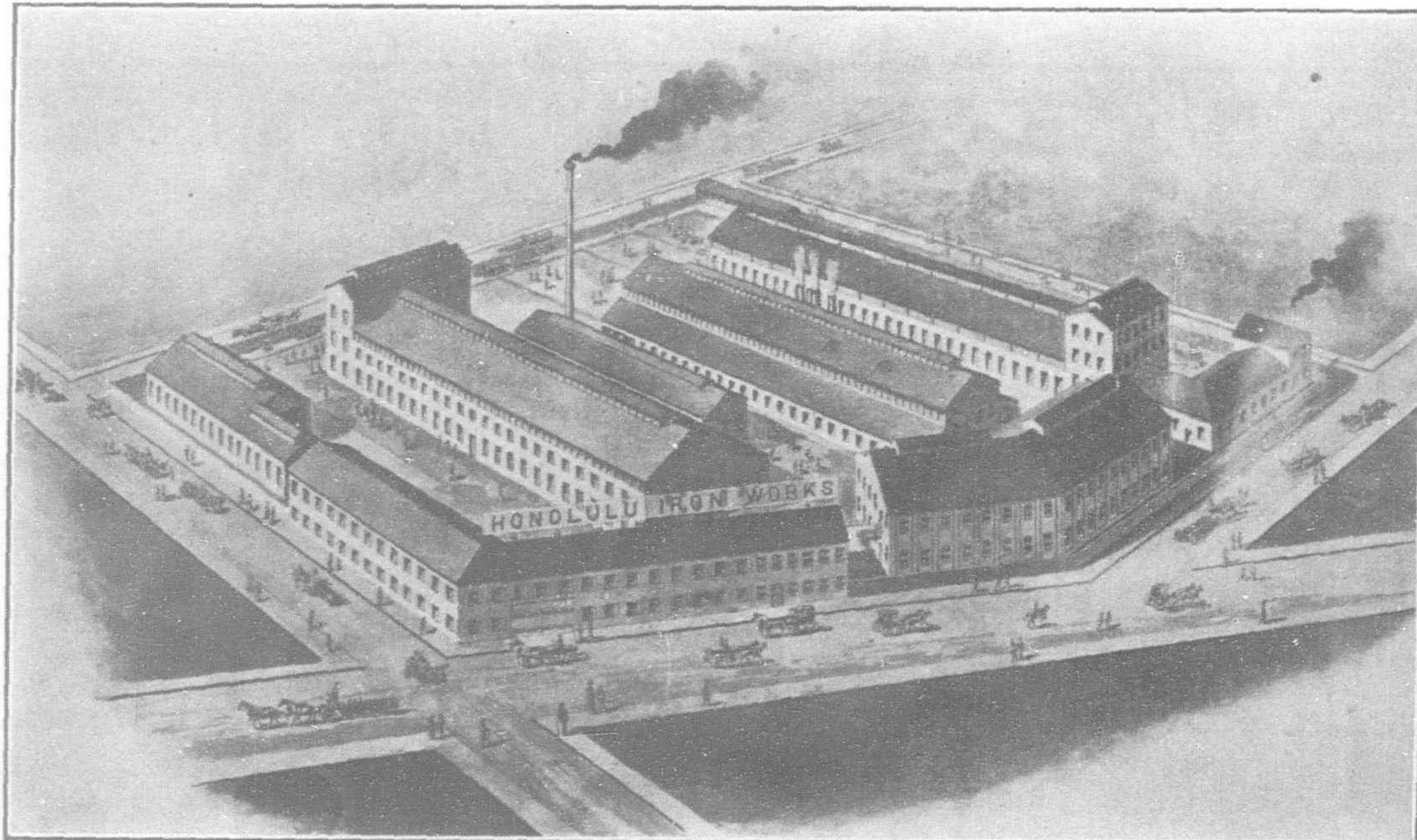
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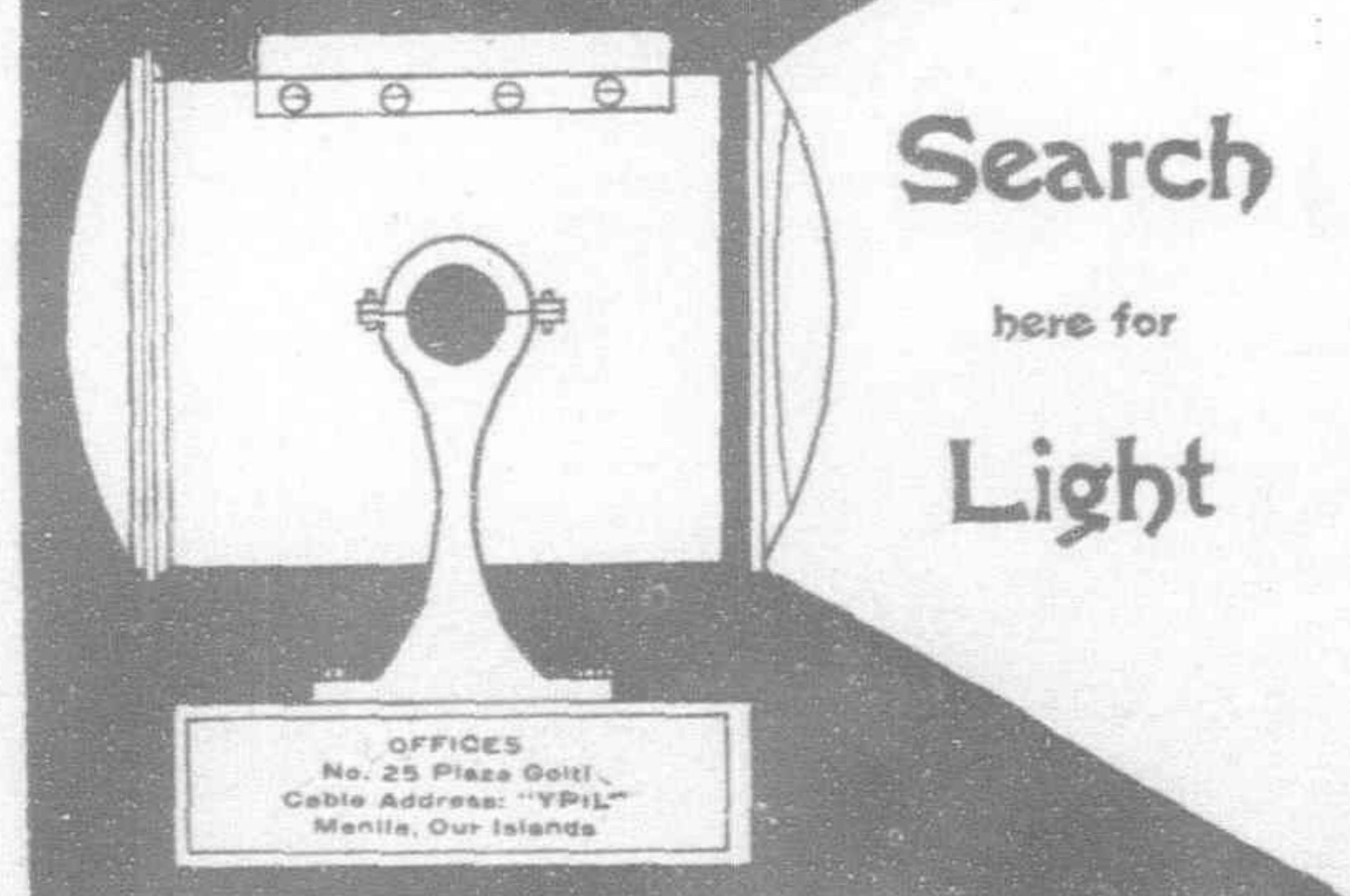
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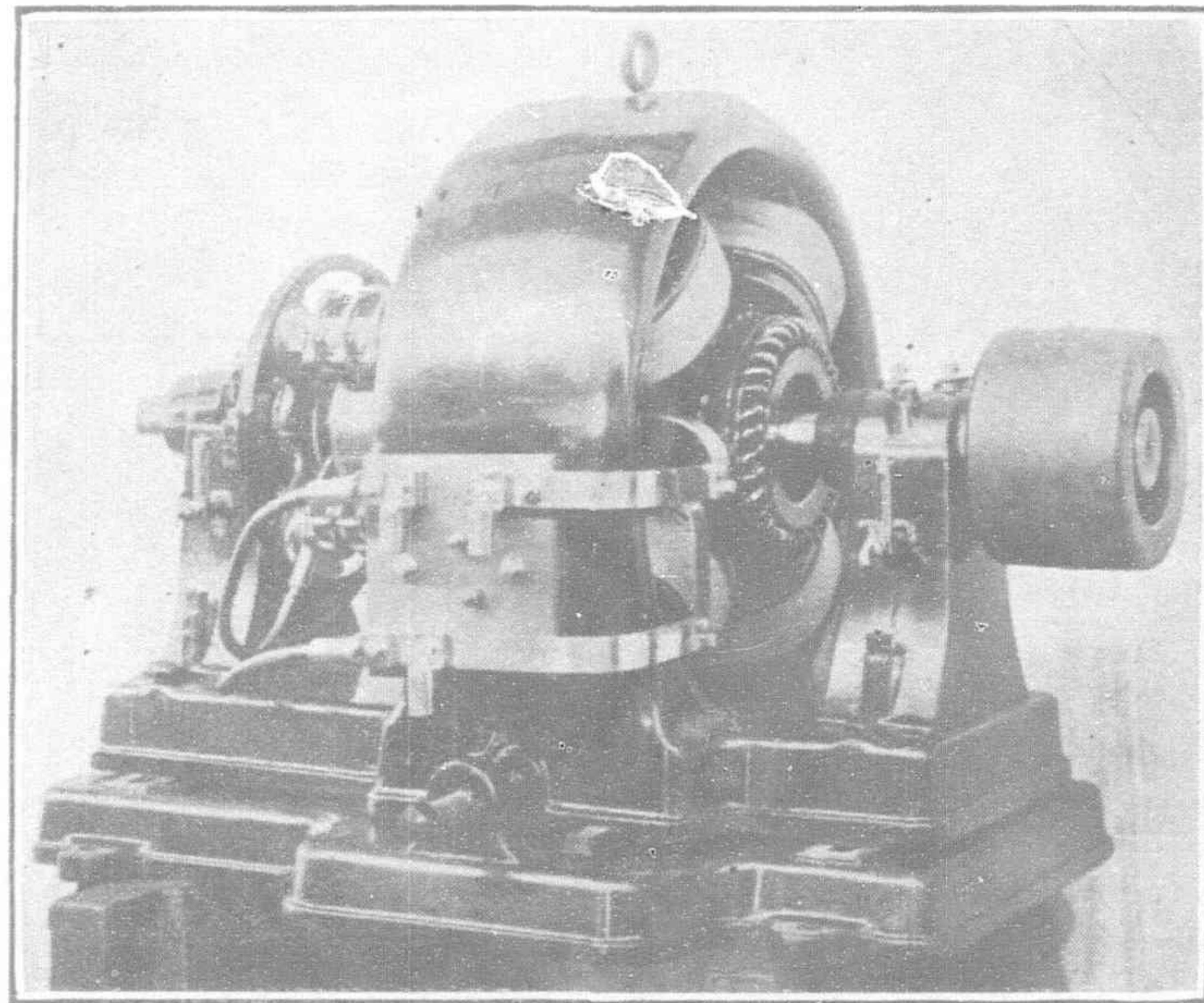
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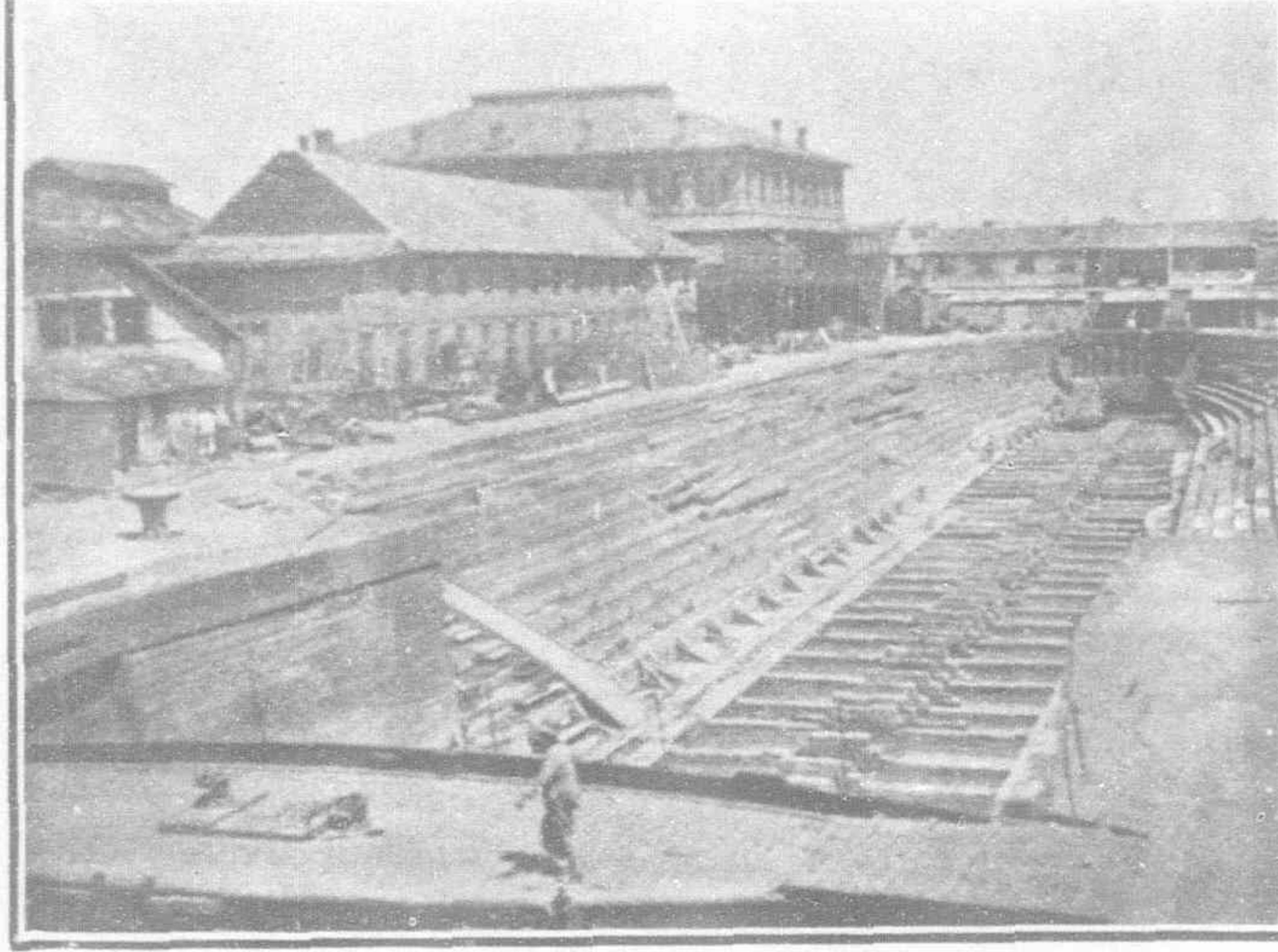
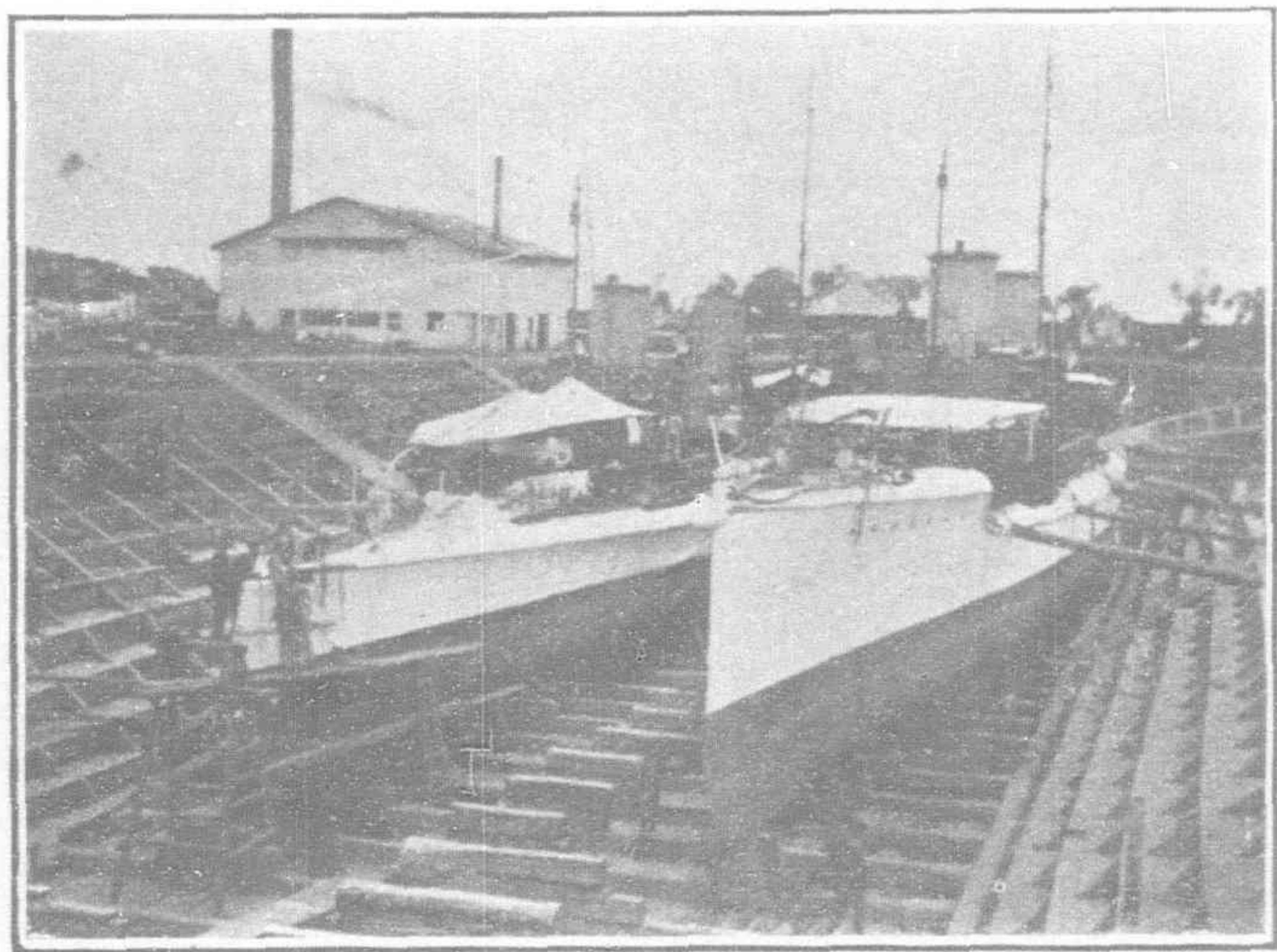
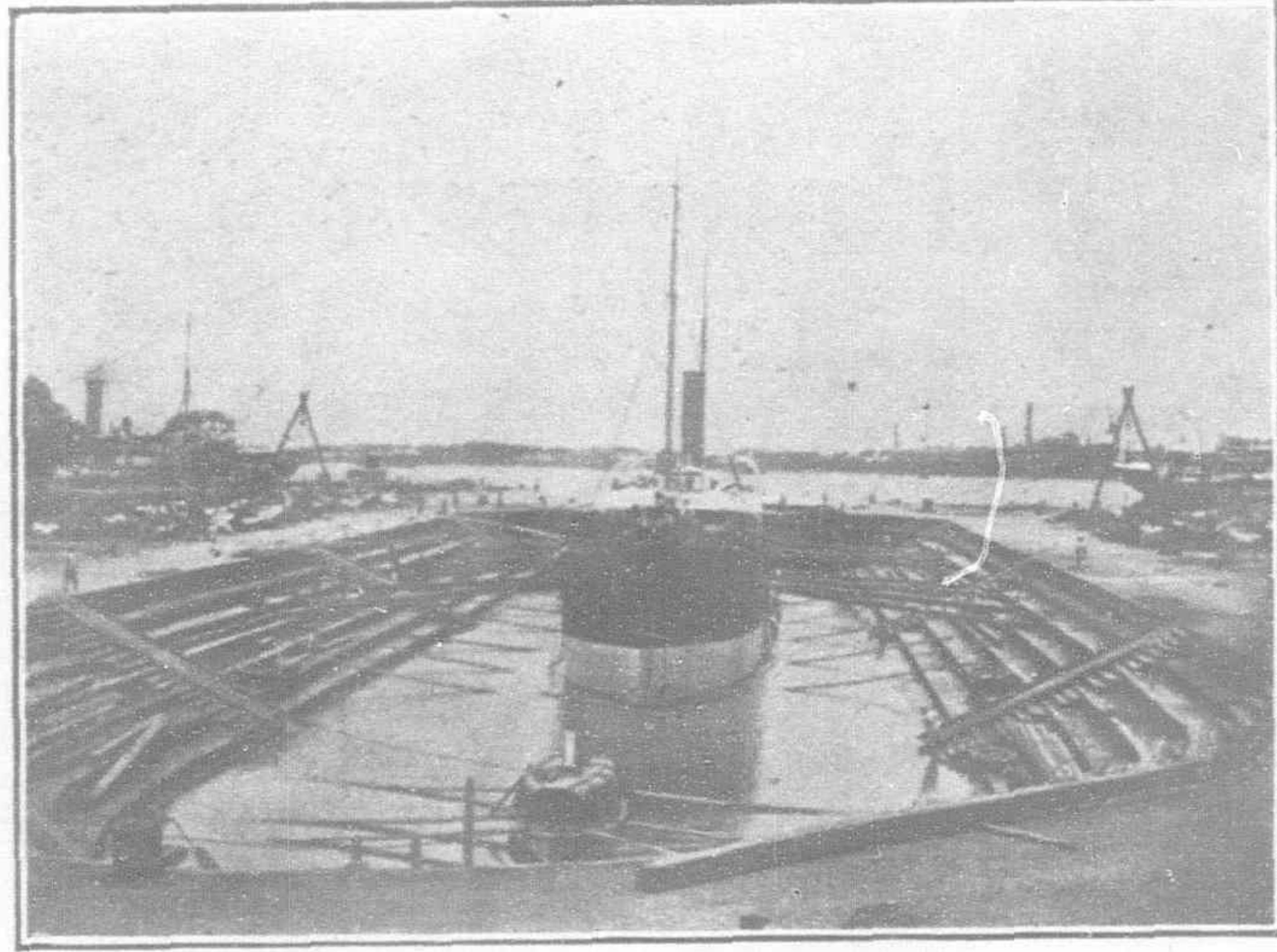
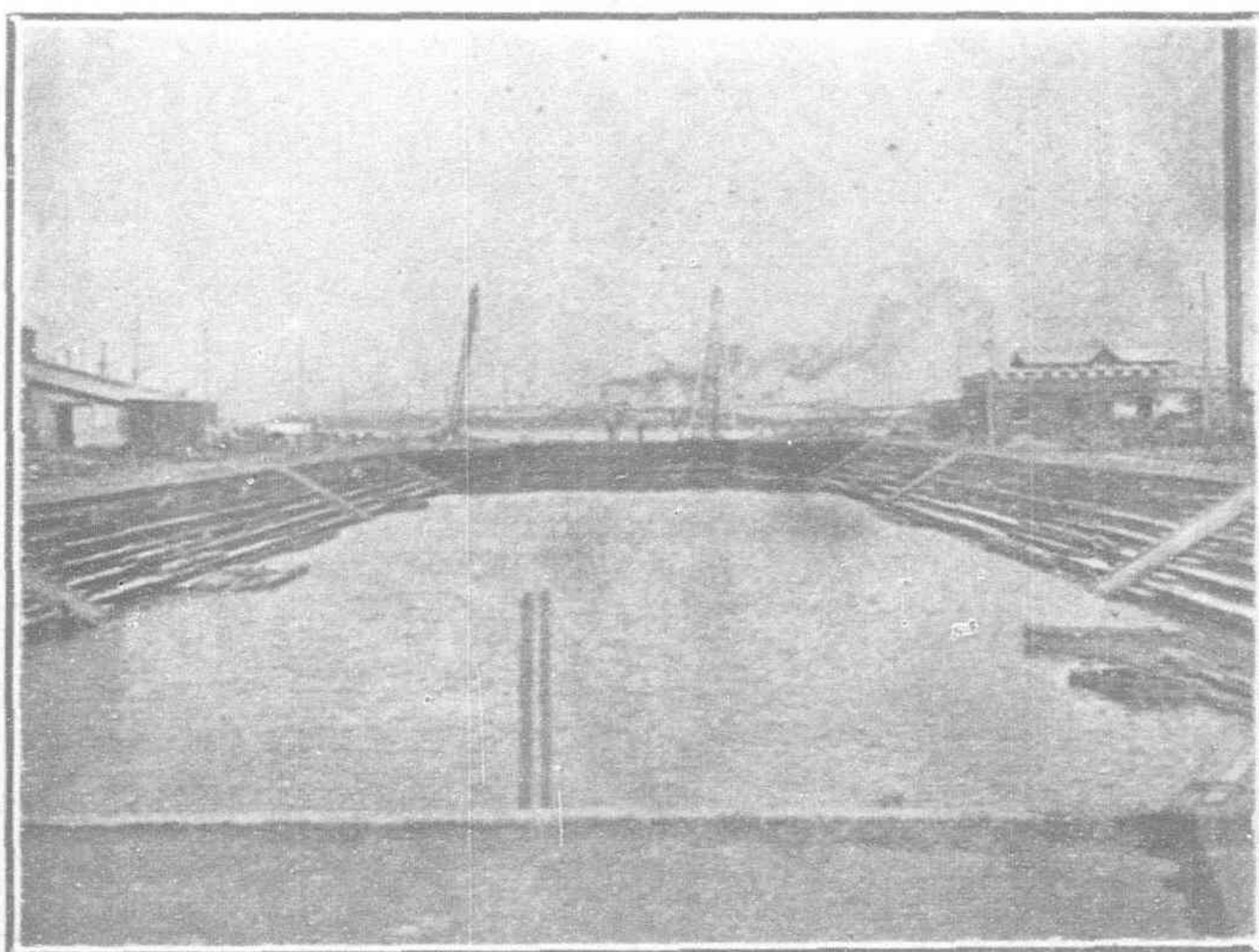
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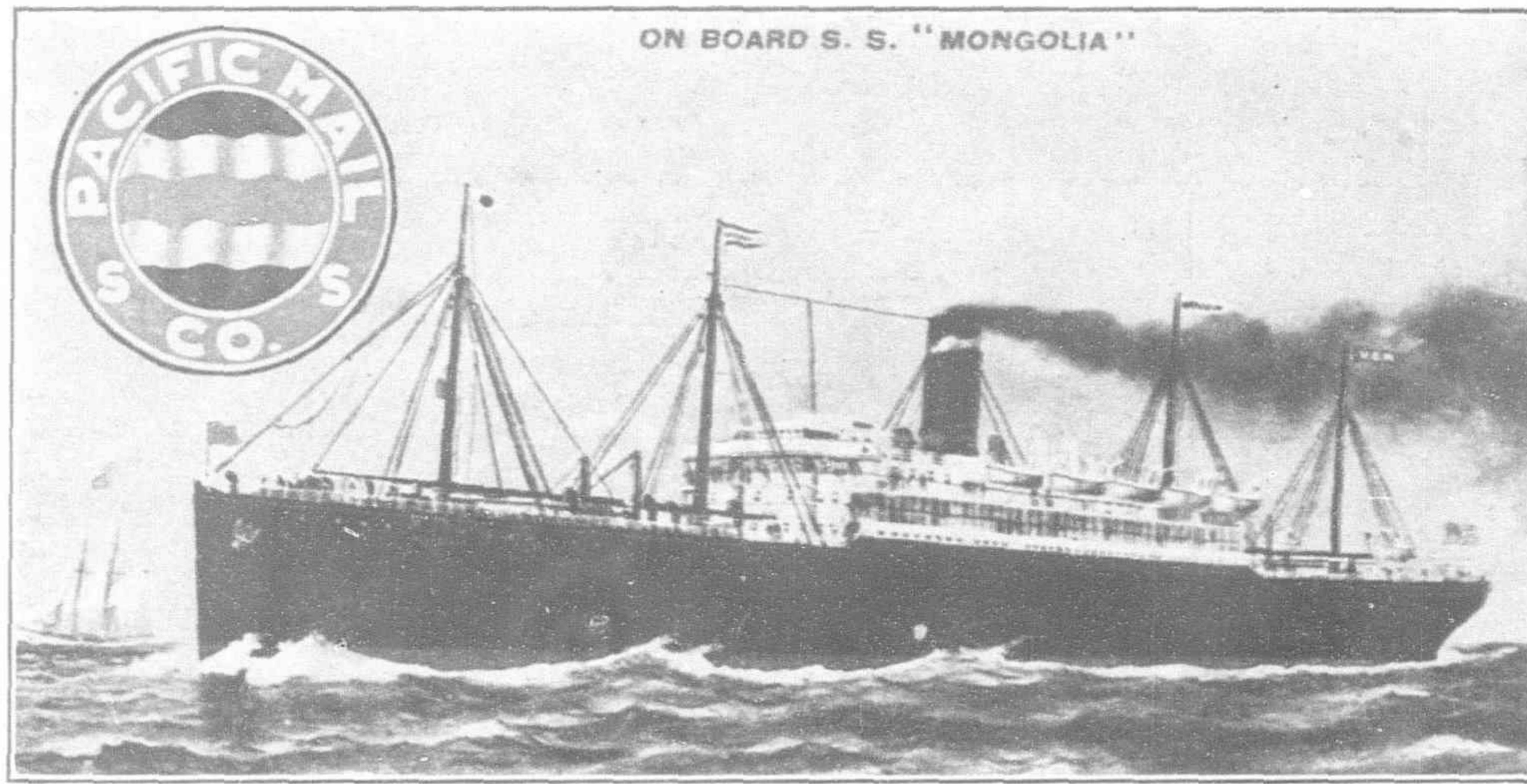
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